

***Soft Budget Constraints, Pecuniary Externality, and the Dual
Track System***

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Abstract

I put forward a new theoretical framework to analyze the relationship between soft budget constraint syndrome and the economic performances of firms. It differs from the existing theoretical framework, *à la* Dewatripont and Maskin (1995), in the soft budget constraint literature.

In this paper, soft budget constraint syndrome arises when firms that are expected to lose money are financed. The paper highlights a trade-off between hard and soft budget constraints. While soft budget constraints may compromise firms' incentives to improve performances, an all-out effort to harden budget constraints may put macro stability at risk, especially for economies suffering from allocative inefficiency.

Based on this trade-off, the paper shows that a transition from centralized financing to decentralized financing in fact compromises firms' incentives to improve their performances, whereas a transition from centralized financing to a dual track system enhances efficiency. In the dual track system, budget constraints are soft in the centralized track but the macro stability of the economy is assured as a result. The macro stability enhances the disciplinary effect of hard budget constraints in the decentralized track, which in turn promotes firms' incentives to improve performances. The paper sheds light on a complementary relation between soft budget constraint syndrome in the state sector (i.e., the centralized track) and the remarkable growth of the non-state sector (i.e., the decentralized track) in China.

Keywords: Soft Budget Constraints, Pecuniary Externality, Financial Dual Track, China's State Sector and Non-State Sector

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1. Introduction

I present in this paper a new theoretical framework for understanding the soft budget constraint syndrome. Based upon this new theoretical framework, I explore the relationship among the soft budget constraint syndrome, the performances of enterprises, and the macro stability of an economy. I use this relationship to shed light on China's dual track economic reform.

The soft budget constraint syndrome is a phenomenon where firms that are *expected* to lose money are kept in business through subsidized financing (Kornai (1980)). It is a phenomenon commonly observed in transition and developing economies. There is now a growing literature on the soft budget constraint syndrome. From this literature emerges one consensus. According to this consensus, hard budget constraints are needed for good performances of firms; and to harden budget constraints, measures like decentralized financing are called for. In light of this consensus, some experiences in transition economies become rather interesting.

Take China as an example. Despite the on-going enterprise reform, the financial performances of China's state-owned enterprises have deteriorated over recent years. At the same time, the reform of China's financial institution has lagged behind. The state-owned banks continue to dominate China's banking sector, and the state dominated banking sector has become a primary funding source responsible for keeping many of the chronic loss-making firms alive. Nevertheless, in spite of the troubled state sector and the lagged reforms in the financial sector, China has maintained almost double-digit growth throughout the last two decades, fueled by the development of China's "non-state" sector.¹

Some questions emerge naturally. Why didn't China harden budget constraints of state-owned enterprises and eliminate the state dominance in the banking sector at the on-set of economic reforms? Would a decentralized banking sector along with a credible commitment to hard budget constraints for state-owned enterprises have unleashed an even greater growth potential? What had been the relation between the soft budget constraint syndrome in the state sector and the rapid growth in the non-state sector?

Clues to these questions may be found at the opposite side of China's experience. At the opposite side stand the experiences of Eastern Europe and the former Soviet Unions where wholesale reforms were accompanied by drastic declines in output (Blanchard and Kremer (1997), Roland and Verdier (1999)). In ten out of the fifteen

¹ A detailed discussion of the development of China's state and non-state sectors, in conjunction with the financial sector reform is relegated to section 6.

countries of the former Soviet Union, GDP for 1996 was less than half of the 1989 level (Blanchard and Kremer (1997)). In some situations, the output fall is in direct association with the government's effort to harden budget constraints, such as in the case of Poland (Calvo and Coricelli (1992)).

This sharp contrast motivates a study of the relationship among the soft budget constraint syndrome, the performances of enterprises and the macro stability of an economy. The key insight emerging from this study can be highlighted as follows.

- Sound performances of enterprises are not possible without a stable macro environment, and a drastic decline in the state sector endangers a stable macro environment.
- By avoiding a drastic decline in the state sector, soft budget constraints help stabilize the economy at a cost of compromising enterprises' incentives to improve their performances.
- A dual track system,² as the one adopted in China, hardens budget constraints in the non-state sector while at the same time allows soft budget constraints in the state sector. Under the dual track approach, the state sector contributes to the macro stability. The macro stability, together with hardened budget constraints in the non-state sector, enhances enterprises' incentives to improve performances in that sector.
- Thus the relation between the soft budget constraint syndrome in the state sector and the rapid growth registered in the non-state sector can be complementary.
- In contrast, an all-out effort to harden budget constraints can be detrimental.

While emphasizing a complementary relation between the state and the non-state sector, this analysis by no means implies that there is no need for fundamental reforms in the state sector. On the contrary, I argue at the end of my analysis that a dual track system is only a half-way measure of economic reform. While providing a strong impetus for the non-state sector, a dual track system allows the state sector to delay due restructuring. However, such a delay is an inevitable cost paid by an economy that suffers from various kinds of allocative inefficiency. For such an economy, it takes much more than simply hardening budget constraints to facilitate restructuring in the state

² The concept of "dual track" originally refers to a practice in China's price reform. In the "dual track" price reform, firms were allowed to produce and sell at market prices at the margin after they fulfilled the state plans (see Li (1994), Lau, Qian, and Roland (1999)). In their recent paper, Lau, Qian, and Roland (1999) has pushed the original concept beyond price liberalization to labor market reform as well. I apply this original concept in the corporate finance context to characterize the phenomenon during China's reform that the state sector continues to be financed by the state-dominated banking system but the non-state sector relies more on financial resources outside the state banking system.

sector. But it is exactly because all those other measures take time to assert their impacts that an all-out effort to harden budget constraints is counterproductive and a dual track system becomes attractive.

Following the tradition of Dewatripont and Maskin (1995), I carry out my argument in a comparison of three financial structures: decentralized financing, centralized financing, and a dual track system. Under decentralized financing, there are many funding sources, each of which financing a negligible share of firms in the economy. Under centralized financing, one single funding source, such as a government or a state-owned banking system, finances all firms in the economy.³ In a dual track system, a large funding source finances some firms in the economy (the centralized track), while the rest of the firms are financed by many small funding sources (the decentralized track). This last financial structure resembles the one in China during its economic transition.⁴

This comparison is laid out in a theoretical framework that consists of the following building blocks. First, the economy analyzed in this paper may suffer from allocative inefficiency, measured by the share of loss-making firms the economy is “endowed” with. I take the presence of a considerable share of such firms as a given feature of a transition economy, which sets it apart from a matured market economy.

The second building block introduces the issue of commitment. In particular, some loss-making firms can avoid losses if they engage in costly restructuring. But they may be reluctant to do so if they will be financed even without restructuring. In this case, a commitment to hard budget constraints can serve as a disciplinary device for inducing these firms to improve their performances. A funding source is committed to hard budget constraints if it extends financing only to firms that are expected to make money.

The last building block is the macro economic condition that impacts the productivity and hence the profitability of every profit-making firm. In particular, in this paper, the profitability of a profit-making firm is positively related to the total number of firms that are financed into operation. As a result, no profit-making firm will make much profit when there are not enough firms financed in the economy. There can be many reasons, either political or economic, behind the relationship between an individual firm’s profitability and the number of firms (not) in operation in an economy. One reason is perhaps that, when many firms get closed down, political unrest may arise, interrupting the production of those firms in operation. Another possible reason may be demand spillover

³ This definition of centralized and decentralized financing differs from the definition used in the existing literature and is more compatible to the conventional notion of centralization and decentralization. The existing literature refers to decentralized financing as financing by funding sources, each with funds smaller than the size of a project, and centralized financing as financing by a funding source with funds larger than the size of a project (see Dewatripont and Maskin (1995)).

⁴ A detailed discussion of China’s dual track system is relegated to section 6.

where increased aggregate demand (as a result of an increased number of firms being financed) improves each and every firm's profitability.

Let me highlight the intuition of how this last building block ties things together and gives rise to an interesting comparison of different financial structures, without detailing how I will model the exact reason behind such a relationship later. I do so because the comparison is qualitatively robust *regardless* of what are the reasons behind such a complementary relationship.

Consider a transition economy, which typically has only a limited share of firms that can make profits. The rest of the firms either are doomed to fail or need restructuring. If only firms that can make profits are financed, there will be too few firms in the economy and as a result, even these firms that can make profits will not make much profit. In other words, there is an pecuniary externality in financing.

Under centralized financing, the large funding source internalizes such externality. Accordingly budget constraints can be soft. That is, some of the loss-making firms are financed in equilibrium.⁵ Anticipating soft budget constraints, those that can avoid losses will shun away from necessary restructuring. This is the situation in which the existing literature calls for a transition from centralized financing to decentralized financing. Under decentralized financing, there is a commitment to hard budget constraints because small funding sources do not internalize the externality of financing loss-making firms. Such a commitment is believed, according to the existing literature, to enhance firms' incentives to improve their performances.

Nonetheless, such a transition turns out to be unwarranted. In fact, the commitment to hard budget constraints brings little efficiency gain under decentralized financing. On the one hand, macro stability is endangered as the economy is deprived of the ability to internalize the externality. And more importantly, firms' incentives are *compromised* rather than enhanced.

The reason for the commitment to hard budget constraints to be incentive compromising can be explained simply. The disciplinary effect of this commitment depends on how much the firm can gain from turning itself from

⁵ While arguing the concern for macro stability is one of the important reasons why soft budget constraint syndrome arises in transition economies, I do not wish to contend this is the only reason. There are arguably many factors contributing to the phenomenon of soft budget constraints (see Lin, Cai and Zhou (1996), Lin and Tan (1999), and Sachs (1996)). One closely related factor is that because of price distortions, financial losses in transition economies may not reflect true economic losses. Another important factor is that financing a loss-making firm is part of the social welfare system. Social welfare system exists in modern economies as well, however it takes the form of soft budget constraints because a firm in a former socialist economy is not only a production unit but also a consumption unit for its employees. While these factors are particularly relevant for pre-reform socialist economies, they are arguably less important with on-going price and enterprise reforms.

a money-loser to a profit-maker. If the economy stumbles into serious financial troubles and if as a result there are only meager profits for restructured firms, firms will have no incentives to restructure.

On the contrary, firms' incentives to restructure can be enhanced if some (but not most) of the loss-making firms are financed and as a result the macro stability is assured. In this case, budget constraints are not too soft and at the same time the profits for restructured firms are increased, thus giving firms better rather than worse incentives to restructure in the absence of such a commitment.

Thus this paper suggests that a commitment to hard budget constraints is *neither sufficient nor necessary* for firms to improve their performances. Furthermore, it indicates that, when the macro stability is at stake, an all-out effort to harden budget constraints may lead to a drastic decline in output and a wavering effort in restructuring, as observed in the experiences of Eastern Europe and the former Soviet Union.

In contrast, a transition from centralized financing to a dual track system is efficiency enhancing. A dual track system, once properly designed, can exploit the "comparative advantages" of both centralized and decentralized financing. In the dual track system, the large funding source internalizes the externality within the centralized track while the small funding sources bring forward a credible commitment to hard budget constraints within the decentralized track. As the large funding source internalizes the externality, soft budget constraint syndrome persists within the centralized track, but at the same time macro stability of the entire economy is assured. The macro stability ensures high profitability for firms with better performances and as a result enhances the disciplinary effect of the commitment to hard budget constraints within the decentralized track. Accordingly, firms in the decentralized track have stronger incentives to engage in restructuring. Hence, there is a complementary relation between the soft budget constraint syndrome in the centralized track and sound economic performances in the decentralized track.

The rest of the paper proceeds as follows. A simple model is introduced in section 2 where I endogenize the externality in financing. Because under each financial structure I study, there is a possibility for equilibrium multiplicity, I describe in section 3 how various financial structures can be compared in the presence of multiple equilibria. In section 4, I address why a transition from centralized financing to decentralized financing is counterproductive. I demonstrate in section 5 why and when a dual track system is more efficient than centralized financing. I relate the insight generated from this model to the Chinese reform experience in section 6. In the

concluding section, I compare the theoretical framework of soft budget constraints introduced in this paper to the mainstream framework in the existing literature, *a la* Dewatripont and Maskin (1995).

2. The Model

Consider an economy that has a continuum of firms in the economy and the continuum is normalized by a unit interval. Each firm is assumed to have a fixed production capacity.⁶ It can produce ϕ units of output by using one unit of input, labor. Outputs are sold on an output market where demand is assumed for simplicity to be perfectly elastic at a price normalized at one. Firms are liquidity constrained and the purchase of inputs is financed by some funding sources.

The economy may suffer from allocative inefficiency. In particular, a firm can be either good or bad in this economy, and the economy is endowed with only γ measure of good firms, $\gamma \in (0, 1)$. Among those bad firms, there is a share of firms that can transform themselves into good ones through restructuring. These firms are referred to as opportunistic ones. An opportunistic firm becomes a good firm with restructuring but remains as a bad firm without restructuring. Let ρ denote the share of opportunistic firms among the bad firms, $\rho < 1$.

One can think of the rest of the bad firms as “genuinely” bad ones that are incapable of transforming themselves. The assumption $\rho < 1$ captures the fact that there is a considerable number of firms in many transition economies that are not viable, regardless of how much effort is devoted into internal restructuring. These firms either possess no comparative advantages at the wake of increased foreign competition, or suffer from insensible resource allocation and huge social welfare burdens inherited from the central planning era.

Financing takes place after restructuring. Accordingly, a firm is either good or bad on the financial market. Information is symmetric on the financial market. I assume that whether a firm is good or bad is public information. Let $g(\gamma)$ denote the measure of good firms on the financial market, which include good firms that the economy is endowed with and any good firms that are transformed from the opportunistic ones.

⁶ What is important to the ensuing analysis is that profit-making firms have fixed production capacities. There would have been no soft budget constraint syndrome had profit-making firms not have fixed production capacities. Simply by closing down loss-making firms and transferring resources to firms that make profits, the soft budget constraint syndrome can be eliminated and a Pareto improvement could be made. Profit-making firms have fixed production capacities either because of technology reasons so that additional capacities generate little productivity, or because of allocative reasons so that additional capacities cannot be accommodated though reallocation of resources.

The productivity of a firm ϕ depends on the quality of the firm (good or bad) on the financial market and the skill (high or low) of the labor it hires on the labor market. As I will indicate later, whether workers will adopt the high skill depends on macro economic conditions, especially the labor demand. Therefore, in alternative, one can think of the labor skill as a proxy of macro economic conditions.

I let $\phi = f(\eta, s)$ where $\eta \in \{\eta_g, \eta_b\}$ represents the quality of the firm, good (η_g) or bad (η_b) and $s \in \{s_h, s_l\}$ denotes the labor skill, high (s_h) or low (s_l). Naturally, $f(\eta_g, s) \geq f(\eta_b, s)$ and $f(\eta, s_h) \geq f(\eta, s_l)$. The crucial assumption of this paper, however, is the complementarity between the quality of an individual firm and the labor skill (or macro economic conditions). That is, $f(\eta_g, s_h) - f(\eta_b, s_h) > f(\eta_g, s_l) - f(\eta_b, s_l)$. With no loss of generality, I adopt a simple specification of ϕ to sharpen the intuition. In particular, I assume that $f(\eta_g, s_h) = q > 0$, $f(\eta_b, s_h) \approx 0$, and $f(\eta, s_l) = 0$.

This specification of a firm's productivity has two implications. First, there is a grave consequence when workers do not have high skills (or alternatively, when the macroeconomic condition becomes bleak): no firm will make profit, leading to a crash of the financial market, as I will show. Second, a bad firm will lose money (almost) irrespective of the input and output prices. Accordingly, the soft budget constraint syndrome to be analyzed in this paper cannot be eliminated through price variations.

Information is asymmetric on the labor market. With probability $1 - \theta > 0$, a firm can differentiate the skill of a worker. With probability θ , a firm will mistaken low skilled worker for high skilled worker. I assume for simplicity that a firm will hire only high skilled worker when it is able to differentiate a worker's skill.⁷

Each worker supplies one unit of labor on the labor market. Because of different opportunity costs for supplying their labor on the market (such as entering the informal sector or choosing early retirement), workers have different reservation wages. Accordingly the market labor supply function is summarized by a function $w(n)$ where n is the measure of labor supplied.

Before they are hired on the labor market, each worker may choose whether to adopt the high skill. To do so, a worker has to incur a sunk cost F ; otherwise the worker will remain as a low skilled labor. One can think of F as the training cost spent by a worker. Presumably, in the context of a transition economy, a worker has to pick up new skills to accommodate the change in organizational environment within firms and the emergence of market

⁷ I will discuss later how a firm may be induced not to hire any low skilled labor (see footnote 9).

institutions outside firms. Otherwise, the worker will remain as only being capable of working under the traditional command/planning system.

Since the information is asymmetric on the labor market, a worker is willing to invest in training if and only if $(1 - \theta)w \geq F$. Let $\underline{w} = F/(1 - \theta)$. Since the cost F is assumed to be identical among all workers, in equilibrium either all workers (hired) invest in training or none invests. Accordingly, an equilibrium wage rate is given by $w^* = w(A)$ where A is the measure of firms financed, which is equal to the market demand for labor. It then follows that there exists \underline{A} , where $w(\underline{A}) = F/(1 - \theta)$, such that workers will invest in training and thus pick up high skill if and only if $A \geq \underline{A}$. As a result, the productivity of a firm can be rewritten as $f(\eta, A)$ such that $f(\eta, A) > 0$ only if $\eta = \eta_g$ and $A \geq \underline{A}$.⁸

Accordingly, a funding source makes its financing decision based on the quality of the firm and the measure of firms financed in the economy. For simplicity, I assume that funds are perfectly elastically supplied to a funding source at a price normalized at one. If a funding source decides to finance a firm, it supplies the fund in return for an exogenously fixed share of the firm's profit. Let α denote this share. The assumption of an exogenously fixed share of profits is made for the purpose of expositional simplicity. The qualitative analysis remains the same when funding sources use other pricing methods. This assumption also ignores competition on the financial market for the sake of analytical convenience. However, incorporating competition on the financial market will not change the qualitative results of my analysis. Liability is limited. As a result, loss of a firm will be borne entirely by its funding source.⁹

I now introduce the problem of commitment associated with the opportunistic firms. I assume restructuring is costly and denote d as the cost. I consider a situation where an opportunistic firm will not engage in the costly restructuring if it will be financed regardless of its restructuring decision. Following Dewatripont and Maskin (1995), I model this situation using a crude and yet standard assumption in the soft budget constraint literature that

⁸ Alternatively, I can assume that the cost varies among workers, in which case, some workers will invest and some will not. Accordingly, in equilibrium, those who invest will all be hired but those who do not invest will be hired with probability θ only. It can be then shown that there exists \underline{A} such that $f(\cdot, A)$ will be increasing in A for $A \geq \underline{A}$. Since my analysis of dual track system is robust to such an alternative specification, I will focus on the simple case instead for expositional clarity.

⁹ Because of limited liability, a funding source will be reluctant to finance a firm unless the firm will use its monitoring capacity to select high skilled labor over low skilled labor. Evidently, given the specification of $f(\cdot, \cdot)$, a firm always prefers high skilled labor under profit sharing as long as it expects to make a profit. When a firm is expected to make a loss, a funding source can offer the firm a simple contingent contract under which the firm is induced to purchase only high skilled labor. Given the specification of $f(\cdot, \cdot)$, such a contract is apparently feasible. Indeed, only a very small amount of incentive payment is needed for a firm to select high skilled labor over low skilled labor, and for this reason I will not model explicitly this incentive payment for

an opportunistic firm receives a private benefit B if and only if it is financed with no restructuring taking place. Presumably, by avoiding restructuring, an opportunistic firm can enjoy some slacks when it is financed into operation.

I assume that, because the presence of the private benefit, an opportunistic firm will never restructure while anticipating to be financed regardless of its restructuring decision. However, it will restructure if it anticipates to be financed with and only with restructuring. That is:

Assumption 1: $B > (1 - \alpha)(q - w(A)) - d > 0$ for $A \in [0, 1]$.

I assume further that it is always (jointly) efficient for an opportunistic firm to restructure and a worker to invest in high skill.

Assumption 2: $q - w(1) > d + F$.¹⁰

Although Assumption 2 is stated conditional on the full employment of firms, it does not imply that it is always efficient to have all firms in operation, since some of them can be money loser. However, since $w(A)$ is increasing in A , this assumption implies no matter how many firms are funded into operation, it is always constrained efficient for an opportunistic firm to adopt restructuring. Assumption 2 also implies that, regardless of the measure of firms financed, a good firm is always profit making as long as high skilled labor is supplied.

In the rest of my analysis, I will consider three financial structures: centralized financing, decentralized financing, and a dual track system. In centralized financing, there is only one large funding source in the economy and all firms have to obtain financing from that source. In decentralized financing, there is a continuum of small funding sources in the economy and each funding source finances a set of firms of an infinitesimal measure. A dual track system is a mix of both centralized and decentralized financing with a centralized track and a decentralized track. In the centralized track, there is one large funding source and all firms within that track have to obtain

expositional simplicity. Instead, I assume that a loss making firms always prefers high skilled labor even without any incentive contract.

¹⁰ I assume that B , the private benefit for an opportunistic firm to remain as a bad firm, does not contribute to social surplus.

funding from that source. In the decentralized track, there is a continuum of small funding sources and each funding source finances a set of firms of an infinitesimal measure.

The sequence of events is as follows. First, opportunistic firms decide whether to restructure or not. Then a funding source decides whether it will offer financing to firms. Once funds are allocated, input market transaction, production, and output market transactions take place in order. Then payoffs are distributed.

3. Preliminaries

Both soft and hard budget constraints are defined in this paper as part of an equilibrium outcome. In contrast, a commitment to hard budget constraints is defined as a funding behavior. It is therefore possible that, even without any commitment to hard budget constraints, hard budget constraints may still emerge in equilibrium.

Definition 1 (Commitment to Hard Budget Constraints): A funding source is committed to hard budget constraints if it never finances a firm that is expected to make a loss.

Definition 2 (Soft versus Hard Budget Constraints): An economy is said to

- (1) suffer from soft budget constraint syndrome in a subgame perfect equilibrium if and only if some bad firms on the financial market are financed in that equilibrium; and
- (2) have hard budget constraints in a subgame perfect equilibrium when no bad firms on the financial market are financed in that equilibrium.

During the comparison of the three financial structures, I will address the following issues. Do firms' budget constraints become harder or softer under one financial structure *vis-à-vis* under another financial structure? Does one financial structure compromise or enhance opportunistic firms' incentives to restructure as compared to a different financial structure? Which financial structure is more constrained efficient?

To address these issues, I need to introduce notions of "harder budget constraints," "better incentives," and "more efficient." Under each financial structure, there is a possibility of equilibrium multiplicity for an economy endowed with γ measure of good firms, denoted by $E(\gamma)$. Accordingly, these notions are defined by comparing the set of equilibria for economies under different financial structures.

Let $\lambda(\gamma)$ be the percentage of bad firms financed in an equilibrium for an economy $E(\gamma)$. Let $\{\lambda_{ix}(\gamma)\}$ be the set of percentages (with a descending order¹¹) of bad firms financed in every equilibrium ($i \in \{1, 2, \dots, n\}$) when the economy $E(\gamma)$ is under a financial structure X . Let $\{\lambda_{jz}(\gamma)\}$ ($j \in \{1, 2, \dots, m\}$) be the corresponding set when the economy is under another financial structure Z .

Definition 3 (Softness of Budget Constraints): Consider two financial structures X and Z .

- (1) Budget constraints are said to be softer under X than under Z for an economy $E(\gamma)$, if and only if $\{\lambda_{ix}(\gamma)\} > \{\lambda_{jz}(\gamma)\}$ ¹²;
- (2) budget constraints are said to be at least as soft under X as under Z for an economy $E(\gamma)$, if and only if $\{\lambda_{ix}(\gamma)\} \geq \{\lambda_{jz}(\gamma)\}$ ¹³; and
- (3) budget constraints are said to be softer under X than under Z , if and only if budget constraints are at least as soft under X as under Z for any economy and are softer under X than under Z for some economies.

Notice, however, not every pair of financial structures can be compared in terms of whether budgets are softer under one than under the other. In other words, the ordering of financial structures in terms of budget softness is incomplete. And so are the ordering of financial structures in terms of their incentive enhancement and the ordering of financial structures in terms of their (constrained) efficiency, as I define below.

Whether a financial structure generates better incentives for firms to restructure can be measured by how many opportunistic firms restructure in equilibrium. Assuming that, in any equilibrium where financing takes place (i.e., $A \neq 0$), every good firm on the financial market will be financed.¹⁴ Then it makes sense to quantify “better incentives” using $g^*(\gamma)$, the measure of good firms financed in equilibrium.¹⁵

¹¹ That is, $\lambda_{ix}(\gamma) \geq \lambda_{jx}(\gamma)$ for $i \geq j$.

¹² For any two vectors with a descending order $\{x_i\}$ ($i \in \{1, 2, \dots, n\}$) and $\{y_j\}$ ($j \in \{1, 2, \dots, m\}$), $\{x_i\} > \{y_j\}$ if and only if one of the following condition holds: (1) $x_n \geq y_m, x_{n-1} \geq y_{m-1}, \dots, x_{n-m+1} \geq y_1$, when $n > m$; (2) $x_1 \geq y_1, x_2 \geq y_2, \dots, x_n \geq y_n$, when $n < m$; or (3) $x_i \geq y_i$ for all $i \in \{1, 2, \dots, n\}$ with some holding as strict inequality, when $n = m$.

¹³ For any two vectors with a descending order $\{x_i\}$ ($i \in \{1, 2, \dots, n\}$) and $\{y_j\}$ ($j \in \{1, 2, \dots, m\}$), $\{x_i\} \geq \{y_j\}$ if and only if one of the following condition holds: (1) $x_n \geq y_m, x_{n-1} \geq y_{m-1}, \dots, x_{n-m+1} \geq y_1$, when $n > m$; (2) $x_1 \geq y_1, x_2 \geq y_2, \dots, x_n \geq y_n$, when $n < m$; or (3) $x_i \geq y_i$ for all $i \in \{1, 2, \dots, n\}$, when $n = m$.

¹⁴ Later, I will show that this is indeed the case under some assumption (see assumption 4 and footnote 17).

¹⁵ There of course exists an equilibrium where no good firms are financed, as I will show. But in such an equilibrium no opportunistic firm will adopt the costly restructuring.

Again, let $\{g^*_{ix}(\gamma)\}$ ($i \in \{1, 2, \dots, n\}$) be the set of the measures (with a descending order) of good firms financed in every equilibrium when an economy $E(\gamma)$ is under a financial structure X . And let $\{g^*_{jz}(\gamma)\}$ ($j \in \{1, 2, \dots, m\}$) be the corresponding set when the economy is under another financial structure Z .

Definition 4 (Incentive Enhancing and Incentive Compromising): Consider two financial structures X and Z .

(1) X is said not to compromise the incentives to restructure as compared to Z for an economy $E(\gamma)$ if and only if

$$\{g^*_{ix}(\gamma)\} \geq \{g^*_{jz}(\gamma)\};$$

(2) X is said to enhance the incentives to restructure as compared to Z for an economy $E(\gamma)$ if and only if $\{g^*_{ix}(\gamma)\} \geq$

$$\{g^*_{jz}(\gamma)\} \text{ and in addition, } g^*_{ix}(\gamma) > \max\{g^*_{iz}(\gamma), \gamma\}; \text{ and}$$

(3) X is said to enhance the incentives to restructure as compared to Z if and only if X does not compromise the incentives as compared to Z for any economy and enhances the incentives as compared to Z for some economies.

The condition $g^*_{ix}(\gamma) > \max\{g^*_{iz}(\gamma), \gamma\}$ implies that a financial structure can be incentive-enhancing only if there exists an equilibrium under the financial structure such that opportunistic firms choose to restructure while financing takes place on the financial market.

Finally, I introduce the notion of “more efficient.” As it will turn out later, regardless of what financial structure an economy has, an equilibrium outcome will have the following property: if $g^*(\gamma) = 0$ in equilibrium, then $\lambda(\gamma) = 0$; if $g^*(\gamma) \in (0, \underline{\Delta})$, $\lambda(\gamma) = \underline{\Delta} - g^*(\gamma)$; and if $g^*(\gamma) \geq \underline{\Delta}$, $\lambda(\gamma) = 0$. Therefore, an equilibrium outcome can be fully characterized by $g^*(\gamma)$ the measure of good firms financed in equilibrium. Thus I denote an equilibrium outcome by $[g^*(\gamma)]$.

Take any two equilibrium outcomes $[g^*_i(\gamma)]$ and $[g^*_j(\gamma)]$ for an economy $E(\gamma)$ regardless of whether these two equilibrium outcomes come under the same financial structure or not. I use the conventional notation \succsim and \succ to denote “at least as efficient as” and “more efficient”. Given assumption 3, an equilibrium outcome $[g^*_i(\gamma)]$ is said to be more efficient than another equilibrium outcome $[g^*_j(\gamma)]$ if and only if $g^*_i(\gamma) > g^*_j(\gamma)$. Let $\{[g^*_{ix}(\gamma)]\}$ ($i \in \{1, 2, \dots, n\}$) denote the set of all equilibrium outcomes with a descending order¹⁶ when an economy $E(\gamma)$ under a

¹⁶ That is, $[g^*_i(\gamma)] \succsim [g^*_j(\gamma)]$ for $i \geq j$.

financial structure X. Let $\{[g^*_{jz}(\gamma)]\}$ ($j \in \{1, 2, \dots, m\}$) denote the corresponding set when the economy is under another financial structure Z.

Definition 5 (Comparative Efficiency Criterion): Consider two financial structures X and Z.

- (1) $X \succeq Z$ for an economy $E(\gamma)$ if and only if one of the following conditions holds:
- (a) $[g^*_{nx}(\gamma)] \succeq [g^*_{mz}(\gamma)]$, $[g^*_{n-1x}(\gamma)] \succeq [g^*_{m-1z}(\gamma)]$, ..., and $[g^*_{n-m+1x}(\gamma)] \succeq [g^*_{1z}(\gamma)]$, when $n > m$;
 - (b) $[g^*_{1x}(\gamma)] \succeq [g^*_{1z}(\gamma)]$, $[g^*_{2x}(\gamma)] \succeq [g^*_{2z}(\gamma)]$, ..., and $[g^*_{nx}(\gamma)] \succeq [g^*_{nz}(\gamma)]$, when $n < m$; or
 - (c) $[g^*_{ix}(\gamma)] \succeq [g^*_{iz}(\gamma)]$ for all $i \in \{1, 2, \dots, n\}$ with $[g^*_{ix}(\gamma)] \succeq [g^*_{iz}(\gamma)]$ for some i , when $n = m$;
- (2) $X \succeq Z$ for an economy $E(\gamma)$ if and only if condition (a) or (b) or :
- (c') $[g^*_{ix}(\gamma)] \succeq [g^*_{iz}(\gamma)]$ for all $i \in \{1, 2, \dots, n\}$ when $n = m$ holds; and
- (3) $X \succeq Z$ if and only if $X \succeq Z$ for any economy and $X \succeq Z$ for some economies.

With these preliminaries laid out, I proceed to the comparison of various financial structures.

4. From Centralized Financing to Decentralized Financing?

Whether soft budget constraint syndrome will arise in an economy depends on the economy's financial structure. I consider two financial structures in this section: centralized financing and decentralized financing. I am interested in the following question. Is a transition from centralized financing to decentralized financing warranted?

I address the question in two steps. In the first step, I will ignore the disciplinary effect of the commitment to hard budget constraints. In other words, I will fix the behavior of those opportunistic firms by assuming a given measure of good firms on the financial market $g(\gamma)$. Since financing takes place after restructuring decisions are made by the opportunistic firms, this step can be regarded as an analysis of a subgame at the financing stage. I will incorporate the disciplinary effect of the commitment to hard budget constraints in the second step by endogenizing $g(\gamma)$ as a part of a subgame perfect equilibrium outcome.

4.1. Soft Budgets versus Credit Crunch

Consider centralized financing first. Under centralized financing, a single large funding source is responsible for financing all firms. To understand how the funding source makes its financing decisions, I divide the problem into two cases: (1) $g(\gamma) \geq \underline{A}$ and (2) $g(\gamma) < \underline{A}$.

(1) $g(\gamma) \geq \underline{A}$. In this situation, the measure of good firms on the financial market is large enough to ensure macro stability. It is then evident that the funding source will finance only good firms. It is also obvious that the equilibrium measure of good firms financed $g^*(\gamma) \in [\underline{A}, g(\gamma)]$. The only question is whether the funding source will finance every good firm. The large funding source may want to finance some good firms in order to manipulate the input price. For simplicity, I will ignore such a possibility with the following assumption.

Assumption 3: $q > w(A) + Aw'(A)$ for any $A \in [0, 1]$.

In other words, the large funding source will finance all good firms when $g(\gamma) \geq \underline{A}$.¹⁷

(2) $g(\gamma) < \underline{A}$. Macro stability is at risk in this case. To stabilize the economy, a large funding source can finance some bad firms to make up the input demand. Since the large funding source will obviously not finance more bad firms than necessary for stabilizing the economy, its funding decision will be dictated by the following simple condition:

$$A = \underline{A} \quad \text{if } \pi(\underline{w}) \geq 0, \text{ and } A = 0 \text{ otherwise,}$$

where $\pi(\underline{w}) = g(\gamma)\alpha(q - \underline{w}) - (\underline{A} - g(\gamma))\underline{w}$ is the profit accrued to the funding source. Since $\pi(\underline{w})$ is increasing in $g(\gamma)$, there must exist a threshold of $g(\gamma)$ beyond which the large funding source will simply give up its attempt to stabilize the economy. Define γ as such a threshold, that is:

$$(\underline{A} - \gamma)/\gamma = \alpha(q - \underline{w})/\underline{w}.$$

Figure 1-a highlights the equilibrium outcomes of the subgame at the financing stage under centralized financing. In Figure 1, when $g^*(\gamma) \in (0, \underline{A})$, budget constraints are soft in the economy and the measure of bad firms financed in the economy equals $\underline{A} - g^*(\gamma)$; when $g^*(\gamma) \geq \underline{A}$, budget constraints are hard and no bad firms are

¹⁷ When the funding source chooses $A \in [\underline{A}, g(\gamma)]$, its payoff is $A\alpha(q - w^*(A))$ since only good firms are financed. Differentiate this payoff function with respect to A , the first derivative is $q - w(A) - Aw'(A)$. Thus the payoff of the large funding source is increasing in A .

financed; and when $g^*(\gamma) = 0$, market crashes. Under centralized financing, soft budget constraint syndrome arises when $g(\gamma) \in [\underline{\gamma}, \underline{A})$. And the reason behind the soft budget constraint syndrome is that under centralized financing, a large funding source tries to internalize the pecuniary externality and may therefore find it worthwhile to extend subsidized financing to bad firms to stabilize the economy.

[Figure 1 enters here]

Next, consider decentralized financing. Under decentralized financing, each funding source finances a zero measure of firms. As a result, these funding sources will not internalize the externality and will therefore never finance any loss-making firms. Hence, when $g(\gamma) < \underline{A}$, no financing will take place since even good firms will be losing money. However, even when $g(\gamma) \geq \underline{A}$, each funding source may still refuse to extend any financing if they anticipate that other funding sources will not finance. In other words, there may be coordination failure among small funding sources under decentralized financing. Figure 1– b summarizes the equilibrium outcomes of the subgame at the financing stage for decentralized financing.

Proposition 1: In any subgame at the funding stage, budget constraints are softer under centralized financing than under decentralized financing.

Proposition 1 suggests that a bad firm on the financial market is more likely to be financed under centralized financing. Nevertheless it does not imply that centralized financing is less efficient than decentralized financing *ex post* (i.e., in a subgame at the funding stage). In fact, it is easy to show that, given any $g(\gamma)$, centralized financing is at least as efficient as decentralized financing, and that when soft budget constraint syndrome does arise, the former is in fact more efficient than decentralized financing.

Nevertheless decentralized financing does help establish a credible commitment to hard budget constraints, which may be lacking under centralized financing. It has been argued extensively that lack of such a credible commitment will compromise firms' incentives to improve their performances (in this case, to engage in costly restructuring). In other words, centralized financing is believed to be less efficient than decentralized financing *ex ante* despite the fact that it may be more efficient *ex post*. Does the need for such a commitment make it sensible to transform centralized financing to decentralized financing? This is the issue I will address in the next section.

But before moving into that issue, I have to entertain a natural question as to whether centralized financing can maintain hard budget constraints and at the same time internalize the pecuniary externality. In particular, instead of resorting to subsidized financing for loss-making firms, is it possible to use wage subsidies to maintain the wage rate received by workers above the threshold level \underline{w} ? The answer is not. Because firms' production capacities are fixed, firms instead of workers will absorb all the wage subsidies.¹⁸ As long as labor demand remains the same, workers will receive the same wage rate.

Then how about a government expenditure program that expands the labor demand directly? Such a program is different from offering subsidized financing to loss-making firms. Because firms use the labor for production, they typically have better monitoring capability (a lower θ) on the labor market as compared to other parties (for example the government). Accordingly, when additional labor demand is brought about through a government expenditure program, the monitoring intensity on the labor market will become diluted. It is then straightforward to show that the threshold wage rate \underline{w} will be increasing in the amount of additional demand brought about through such a program. As a result, a government expenditure program can be completely ineffective in inducing workers to supply high skilled labor.

One key observation thus emerges. While appearing to be subsidies for loss-making firms, soft budget constraints are actually *indirect* subsidies for workers in order to induce them to invest in high skills.¹⁹ Such subsidies are needed because good firms do not generate enough labor demand. These subsidies are administered through subsidized financing for loss-making firms because only *firms* can better monitor workers' skill on the labor market. In this sense, firms behave like "middlemen" in delivering subsidies to workers that produce high skilled labor.

This observation is similar to a typical argument in the existing literature that soft budget constraints for a firm are actually subsidies for its workers, either thanks to a paternalistic government (Kornai (1980)) or because of politicians' attempt to patronize their constituents (Shleifer and Vishny (1994)). However, the existing literature has not explained why subsidies are not delivered to workers directly. My analysis makes the first attempt in highlighting the difference between subsidizing labor and subsidizing firms that use the labor.

¹⁸ Please refer to footnote 6 for a discussion why (good) firms' production capacities are fixed when soft budget constraint syndrome is present.

4.2. Incentive Enhancing or Incentive Compromising

Let me now address the issue as to whether the need for a commitment to hard budget constraints makes it sensible to transform centralized financing to decentralized financing. To address the issue, I endogenize the behavior of opportunistic firms and hence the measure of good firms on the financial market $g(\gamma)$. To simplify my analysis, I will focus on symmetric equilibrium: either no opportunistic firms restructure in which case $g(\gamma) = \gamma$, or all of the opportunistic firms restructure so that $g(\gamma) = \gamma + \rho(1 - \gamma)$. Thus, the equilibrium measure of good firms financed $g^*(\gamma) \in \{0, \gamma, \gamma + \rho(1 - \gamma)\}$.

I begin my analysis with decentralized financing. Under decentralized financing, because of the commitment to hard budget constraints, every opportunistic firm will choose to restructure as long as financing takes place in equilibrium (i.e., $g^*(\gamma) > 0$). Hence $g^*(\gamma) \in \{0, \gamma + \rho(1 - \gamma)\}$.

An equilibrium with $g^*(\gamma) = 0$ evidently exists for all γ . An equilibrium with $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ exists if and only if small funding sources choose to finance. And small funding sources will finance if and only if they anticipate the measure of good firms financed on the financial market $A \geq \underline{A}$ (i.e., market is stable). Thus, let γ_h be such that

$$\gamma_h + \rho(1 - \gamma_h) = \underline{A}.$$

I have shown in the previous discussion that centralized financing can overcome, in a somewhat trivial way, the problem of coordination failure among funding sources that exists under decentralized financing. For a more meaningful comparison between decentralized and centralized financing, I put aside this problem. Accordingly, the equilibrium outcomes under decentralized financing can be summarized as follows:

Lemma 1: Under decentralized financing, $\lambda(\gamma) = 0$ for any γ ; and there exists

- (1) an equilibrium outcome with $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ when $\gamma \geq \gamma_h$; and
- (2) an equilibrium outcome with $g^*(\gamma) = 0$ when $\gamma < \underline{A}$.

Using Lemma 1 as a benchmark for comparison, I now turn to the case of centralized financing.

¹⁹ Notice that the demand on the input market is inelastic because of firms' fixed production capacities, the supply on the input market, however, is elastic. Thus, the only way to subsidize inputs is to expand the input demand.

Under centralized financing, soft budget constraint syndrome may arise. But does such soft budget constraint syndrome compromise firms' incentives as compared to decentralized financing? The answer is no. Instead:

Proposition 2: Decentralized financing compromises incentives to restructure as compared to centralized financing.

Proof: see Appendix.

The intuition behind Proposition 2 is rather straightforward. Soft budget constraint syndrome arises under centralized financing when the large funding source extends subsidized financing to make up weak demand in an effort to keep the economy stable. Without soft budget constraints, the economy is destabilized. Once macro stability is lost and the economy stumbles into a downward spiral, the disciplinary effect of hard budget constraints evaporates and the opportunistic firms will surely not restructure. It is therefore evident that decentralized financing will never improve firms' incentives as compared to centralized financing.

Instead, decentralized financing actually discourages firms to engage in due restructuring. Setting aside the coordination failure among funding sources as in Lemma 1, there are two additional reasons why decentralized financing damages firms' incentives as compared to centralized financing.

The first reason comes from the "coordination effect." Consider $\gamma < \underline{A}$ but arbitrarily close to \underline{A} . According to Lemma 1, there exists an equilibrium $g^*(\gamma) = 0$ and an equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ under decentralized financing. Such equilibrium multiplicity is a result of the externality of restructuring among the opportunistic firms. When enough opportunistic firms choose to restructure, the economy becomes stabilized, in which case it is better off for an opportunistic firm to restructure. However, when there is not enough opportunistic firm restructuring, the economy is destabilized and hence no opportunistic firm will restructure. Accordingly, there is coordination failure *among firms* under decentralized financing.

Centralized financing helps overcome such coordination failure. While it is trivial that centralized financing can eliminate coordination failure *among funding sources*, it is not so trivial why centralized financing can help overcome coordination failure *among firms* existing under decentralized financing. To understand this, notice that, since γ is arbitrarily close to \underline{A} , the large funding source will surely offer subsidized financing to some bad firms to stabilize the economy under centralized financing. But since only a tiny proportion of bad firms is financed, the budget constraints are almost hard. Given the stabilized economy and the nearly hard budget constraints, it thus

becomes a dominant strategy for every opportunistic firm to restructure regardless of what other opportunistic firms do.

The second reason comes from the “stabilization effect.” Consider $\gamma < \gamma_h$ but arbitrarily close to γ_h . Under decentralized financing, there is a unique equilibrium of $g^*(\gamma) = 0$ (see Lemma 1). In this equilibrium, small funding sources are unwilling to finance any firm because, even with all opportunistic firms restructuring, the measure of good firms is not large enough to stabilize the economy. Without financing from funding sources, the economy will be destabilized and anticipating that, no opportunistic firm will restructure. In contrast, under centralized financing, the large funding source is surely willing to subsidize some loss-making firms when all opportunistic firms restructure, given that γ is arbitrarily close to γ_h . Its subsidized financing helps stabilize the economy. But exactly because γ is arbitrarily close to γ_h , only a tiny proportion of bad firms will be financed when all opportunistic firms restructure. Accordingly, a firm’s budget constraint is almost hard when all other opportunistic firms restructure. Hence an opportunistic firm will have the incentive to restructure.

In other words, it is exactly the lack of a commitment to hard budget constraints under centralized financing that brings the best out of the disciplinary effect of hard budget constraints. With a credible commitment to hard budget constraints, decentralized financing denies the possibility to make budget constraints soft enough, so that macro stability can be maintained, and at the same time hard enough, so that firms will have incentives to improve their performances.

By now it should be clear that, even taking into account the disciplinary effect of the commitment to hard budget constraints, a transition from centralized financing to decentralized financing can be rather counterproductive. When macro stability is at stake, a transition to decentralized financing can destabilize the economy through “credit crunch”, and as a result can discourages firms from embracing due reforms.

Proposition 3: Decentralized financing is less efficient than centralized financing.

Proof: See Appendix.

Proposition 3 is a result about a particular environment, where both macro stability and firms’ performances are at stake. While the concern for macro stability calls for a centralized party to internalize the pecuniary externality and stabilize the economy, the concern for firms’ performances calls for a mechanism to

strengthen disciplines and enhance incentives. Proposition 3 suggests that, in such an environment, a transition to decentralized financing from centralized financing is counterproductive, despite the fact that decentralized financing brings a credible commitment to hard budget constraints, while centralized financing may lead to soft budget constraints.

5. From Centralized Financing to the Dual Track System

While the transition from centralized financing to decentralized financing is counterproductive, a transition from centralized financing to a dual track system can be efficiency enhancing. Under a dual track system, the economy is divided into two sectors or two tracks: a centralized one and a decentralized one. In the centralized track, a large funding source finances a group of firms, while the rest of firms in the economy are financed in the decentralized track by a continuum of small funding sources.

As it will turn out, the performance of a dual track system depends on how firms are allocated across these two tracks. Therefore I begin my analysis by defining the allocation of firms. A dual track system allocates some of the firms to the decentralized track and others to the centralized track before restructuring takes place. My interest is not so much about how such an allocation takes place, rather it is about whether there is a set of allocations such that a dual track system is more efficient than centralized financing.

To simplify my analysis, I assume that only the information of whether a firm is good or bad is used in determining an allocation, presumably because whether a firm is opportunistic is unknown to anyone but the firm itself. Accordingly, an allocation is characterized by the measures of firms in centralized track and the share of good firms among these firms. Furthermore, I allow the allocation to be contingent on the initial condition of the economy, i.e., the measure of good firms the economy is endowed with. Let k_c denote the first measure and γ_c denote the second measure. An allocation is then summarized by $\{k_c(\gamma), \gamma_c(\gamma)\}$. By definition, $\gamma_c(\gamma) \leq \min\{k_c(\gamma), \gamma\}$ and $k_c(\gamma) - \gamma_c(\gamma) \leq 1 - \gamma$.

Thus defined, it is evident that centralized financing and decentralized financing are nothing but degenerated forms of a dual track system. In particular, when $k_c(\gamma) = 1$ and hence $\gamma_c(\gamma) = \gamma$, the resulting dual track system is centralized financing. Similarly, when $k_c(\gamma) = 0$ and hence $\gamma_c(\gamma) = 0$, the resulting dual track system is decentralized financing. This observation thus implies that a dual track system can always be at least as efficient as centralized financing. However, this trivial observation is not what my analysis is intended for. What I am

interested in is whether a dual track system can actually be *more* efficient than centralized financing. In other words, I want to know whether for some γ , there exists an allocation $\{k_c(\gamma), \gamma_c(\gamma)\}$ with $k_c(\gamma) \in (0, 1)$ such that a dual track system is strictly more efficient than centralized financing for an economy $E(\gamma)$.

5.1. What a Dual Track System Cannot Do

Recall that there are two potential problems in an economy studied in this paper. One is macro instability, which is highlighted by the equilibrium of market crash ($g^*(\gamma) = 0$). The other problem is that the effort to stabilize the economy compromises firms' incentives to restructure because in equilibrium budget constraints are too soft. The second problem is highlighted by the equilibrium where not only some bad firms are financed but also no opportunistic firms choose to restructure as a result ($g^*(\gamma) = \gamma$ such that $\gamma < \underline{A}$).

Definition 6 (Incentive Compromising Soft Budget Constraint Syndrome): Soft budget constraint syndrome is said to be incentive compromising for an economy $E(\gamma)$ if and only if there exists the equilibrium $g^*(\gamma) = \gamma$ for that economy such that $\gamma < \underline{A}$.

A dual track system *could* improve upon centralized financing through these two dimensions: stabilizing the economy and enhancing incentives by hardening budget constraints. However, it turns out that a dual track system can never improve upon centralized financing by stabilizing the economy. In other words,

Proposition 4: A dual track system cannot improve on centralized financing by stabilizing the economy. That is, if $g^*(\gamma) = 0$ is an equilibrium under centralized financing, it must remain as an equilibrium under a dual track system.

The intuition is as follows. When $g^*(\gamma) = 0$ is an equilibrium under centralized financing, a dual track system could be more efficient than centralized financing only if, according to the “comparative efficiency criterion,” $g^*(\gamma)$ is not an equilibrium under a dual track system, which is unfortunately impossible.

To see this, suppose $g^*(\gamma) = 0$ is one of the equilibria under centralized financing. This implies that either the large funding source is unwilling to finance when there is no restructuring, i.e., $g(\gamma) = \gamma$; or the large funding

source refuses to finance even when all opportunistic firms have restructured, i.e., $g(\gamma) = \gamma + \rho(1 - \gamma)$. Consider the first case. If, given that there is no restructuring in both tracks, the large funding source is unwilling to finance under centralized financing, it must continue to be unwilling to finance under a dual track system, regardless of what small funding sources will do. And if the large funding source is unwilling to finance in the centralized track, there must be no reason for small funding sources to finance in the decentralized track. Hence $g^*(\gamma) = 0$ is an equilibrium under a dual track system. Now let's consider the second case. If the large funding source refuses to finance even when all opportunistic firms have restructured under centralized financing, it obviously will not finance under a dual track system regardless of what small funding sources will do. Hence, for the same reason, $g^*(\gamma) = 0$ will be an equilibrium under a dual track system.

The corollary of Proposition 4 is that a dual track system can improve upon centralized financing only if soft budget constraint syndrome is incentive compromising. Accordingly, I introduce the next observation. Let $\mu = \alpha(q - \underline{w})/\underline{w}$ and let $v = [(1 - \alpha)(q - \underline{w}) - d]/B$.

Assumption 4: $\underline{A}/(1 + \mu) \geq (\underline{A} - v)/(1 - v)$.

Lemma 2: Suppose Assumption 4 holds. Then under centralized financing, there exists an equilibrium where soft budget constraint syndrome is incentive compromising (i.e., $g^*(\gamma) = \gamma$) if and only if the following condition holds:

$$\underline{A}/(1 + \mu) \leq \gamma < (\underline{A} - v)/(1 - v).$$

Proof: see Appendix.

5.2. When a Dual Track System Can Do Better

Now consider the case where soft budget constraint syndrome may compromise firms' incentives under centralized financing (i.e., Assumption 4 holds). I will first characterize the equilibrium outcomes under centralized financing. I will then examine whether for some economies there exist some allocations so that a dual track system will be more efficient than centralized financing.

Define γ_1 as such that

$$\gamma_1 + \rho(1 - \gamma_1) = (\underline{A} - v)/(1 - v).$$

And define γ_2 as such that

$$\gamma_2 = (\underline{A} - v)/(1 - v).$$

It is straightforward to show that, anticipating $g(\gamma) = \gamma + \rho(1 - \gamma)$, an opportunistic firm will restructure if and only if $\gamma \geq \gamma_1$; and that an opportunistic firm will restructure while anticipating $g(\gamma) = \gamma$ if and only if $\gamma \geq \gamma_2$.

Lemma 3: Suppose Assumption 4 holds. Then under centralized financing, there exists

- (1) an equilibrium with $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ if $\gamma \geq \gamma_1$;
- (2) an equilibrium with $g^*(\gamma) = \gamma$ if $\gamma \in [\underline{\gamma}, \gamma_2]$ ²⁰; and
- (3) an equilibrium with $g^*(\gamma) = 0$ if $\gamma < \underline{\gamma}$.

Lemma 3 is highlighted in Figure 2. The left panel of Figure 2 describes a case when $\gamma_1 < \underline{\gamma}$ and the right panel shows otherwise. In this figure, the bold line represents $g^*(\gamma)$, the measure of good firms financed in equilibrium. The thin line located at \underline{A} indicates the total measure of firms financed when soft budget constraint syndrome exists. Soft budget constraint syndrome compromises firms' incentives to restructure when $g^*(\gamma)$ is on the 45 degree line (i.e., $g^*(\gamma) = \gamma$). As suggested in the last section, soft budget constraint syndrome does not always compromise incentives. In fact, Figure 2 demonstrates that soft budget constraint syndrome can be quite consistent with a situation where every opportunistic firm chooses to restructure.

[Figure 2 enters here]

Let's now turn to the dual track system. With the aid of Figure 2, it becomes evident that a dual track system can never be more efficient than centralized financing for $\gamma \geq \gamma_2$. Following Proposition 4, it is evident that a dual track system cannot be more efficient than centralized financing for $\gamma < \underline{\gamma}$ either. My attention is therefore led to $\gamma \in [\underline{\gamma}, \gamma_2)$, i.e. to those economies suffering from a soft budget constraint syndrome that is incentive compromising. Some preliminary observations are in order.

First, in an equilibrium where the large funding source finances in the centralized track, restructuring must take place for every opportunistic firm in the decentralized track, and as a result financing must take place in the decentralized track.

²⁰ Notice that $\underline{\gamma} = \underline{A}/(1 + \mu)$. See the definition of $\underline{\gamma}$ on page 14.

Lemma 4: In any equilibrium where the large funding source finances in the centralized track, financing and restructuring take place in the decentralized track.

The intuition is clear. Financing takes place in the centralized track only if high skilled labor are supplied on the input market. Hence, if financing takes place in the centralized track in equilibrium, small funding sources will finance a firm in the decentralized track if and only if it is a good firm. As a result, every opportunistic firm in the decentralized track will transform itself into a good firm through restructuring.

The next observation is the natural implication of Lemma 4.

Lemma 5: For an economy $E(\gamma)$ such that $\gamma > \underline{\gamma}$, financing always takes place in both centralized track and decentralized track and restructuring always takes place in the decentralized track, *provided* that $k_c(\gamma) \in [\underline{A}, 1)$ and $\gamma_c(\gamma) \geq \underline{\gamma}$.

The intuition is again straightforward. For an economy $E(\gamma)$ such that $\gamma > \underline{\gamma}$, an allocation with $k_c(\gamma) \in [\underline{A}, 1)$ and $\gamma_c(\gamma) \geq \underline{\gamma}$ is feasible (since $\underline{\gamma} < \underline{A}$). Given that $k_c(\gamma) \in [\underline{A}, 1)$, there are enough firms in the centralized track for the large funding source to stabilize the economy. And given that $\gamma_c(\gamma) \geq \underline{\gamma}$, the large funding source is willing to stabilize the economy by financing in the centralized track, even when no opportunistic firm restructures (see Lemma 3). As a result, the economy is always stabilized. The rest then follows immediately from Lemma 4.

Lemma 5 demonstrates one of the central observations of this paper. That is, under a dual track system, *provided* that the large funding in the centralized track is both capable and willing to stabilize the economy, the decentralized track will no longer be plagued by problems that besiege decentralized financing. Lemma 5 highlights the significance of the centralized track to the performances of firms within the decentralized track. By helping stabilize the economy, the centralized track enhances the disciplinary effect of the commitment to hard budget constraints in the decentralized track and therefore promotes better performances of firms within that track.

Nevertheless, it is not true that, for an economy $E(\gamma)$ such that $\gamma > \underline{\gamma}$, any allocation such that $k_c(\gamma) \in [\underline{A}, 1)$ and $\gamma_c(\gamma) \geq \underline{\gamma}$ will necessarily make a dual track system more efficient than centralized financing. For some $\gamma \in [\underline{\gamma}$,

γ_2), there exists an equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ (see Figure 2). Naturally, a dual track system is more efficient than centralized financing only when this equilibrium is preserved under the dual track system. Similarly, there does not exist an equilibrium $g^*(\gamma) = 0$ for any $\gamma \in [\underline{\gamma}, \gamma_2)$ under centralized financing. A dual track system is more efficient than centralized financing only when such an equilibrium does not exist under the dual track system either.

For these reasons, I lay out some restrictions on an allocation $\{k_c(\gamma), \gamma_c(\gamma)\}$. The first restriction is that, if the economy has an equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ under centralized financing, the allocation $\{k_c(\gamma), \gamma_c(\gamma)\}$ must allow such an equilibrium to continue to exist under the dual track system. In particular, suppose an economy $E(\gamma)$ choose an allocation $\{k_c, \gamma_c\}$ for its dual track system. With such an allocation, an opportunistic firm will restructure (while anticipating restructuring to take place in both centralized track and decentralized track and financing to take place in the economy) if and only if

$$[\underline{A} - \gamma - \rho(1 - \gamma)] / [(1 - \rho)(k_c - \gamma_c)] \leq v. \quad [1]$$

And given that restructuring takes place in both tracks, the large funding source will finance, either when the economy is stable (i.e., $\gamma + (1 - \gamma)\rho \geq \underline{A}$) or when it can profit from stabilizing the economy:

$$[\underline{A} - \gamma - \rho(1 - \gamma)] / [\gamma_c + \rho(k_c - \gamma_c)] \leq \mu. \quad [2]$$

Lemma 6: A dual track system is more efficient than centralized financing only if $\{k_c(\gamma), \gamma_c(\gamma)\}$ satisfies condition [1] and [2] for any $\gamma > \gamma_1$.

The second restriction that has to be imposed is that the large funding source must be able and be willing to stabilize the economy. It is straightforward to verify that the equilibrium $g^*(\gamma) = 0$ will exist under a dual track system for $\gamma \geq \underline{\gamma}$ if and only if $k_c(\gamma) < \underline{A}$ or if $\gamma_c(\gamma) < \underline{\gamma}$. Hence:

Lemma 7: A dual track system is more efficient than centralized financing only if $k_c(\gamma) \geq \underline{A}$ and $\gamma_c(\gamma) \geq \underline{\gamma}$ for $\gamma \geq \underline{\gamma}$.

With all these preliminary observations, the next conclusion then comes handy:

Proposition 5: There exists a dual track system that is more efficient than centralized financing *if and only if* an economy suffers from soft budget constraint syndrome that compromises firms' incentives to engage in costly restructuring, i.e., if and only if $\gamma \in [\underline{\gamma}, \gamma_2)$.

Proof: see Appendix.

The intuition behind Proposition 5 can be explained simply. For $\gamma \in [\underline{\gamma}, \gamma_2)$, there exists an equilibrium $g^*(\gamma) = \gamma$ and possibly an equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ under centralized financing. A dual track system can improve efficiency as compared to centralized financing if and only if it maintains the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ if it exists under centralized financing and replaces the equilibrium $g^*(\gamma) = \gamma$ with an equilibrium $g^*(\gamma) > \gamma$, while at the same time not creating an equilibrium $g^*(\gamma) = 0$.

Suppose that the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ does not exist under centralized financing. Then a dual track system that spins off only bad firms to the decentralized track while keeping at least $\underline{\Delta}$ measure of firms (among those, at least $\underline{\gamma}$ measure of good firms) in the centralized track must dominate centralized financing (Lemma 5).

Suppose that the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ does exist under centralized financing. In such an equilibrium, both the incentive compatibility condition for an opportunistic firm to restructure and the participation constraint for the large funding source to finance are not binding provided that $\gamma > \gamma_1$. Therefore, it is always feasible (for $\gamma > \max\{\gamma_1, \underline{\gamma}\}$) to spin off some bad firms to the decentralized track without affecting either of these two constraints, while at the same time keeping at least $\underline{\Delta}$ measure of firms (among those, at least $\underline{\gamma}$ measure of good firms) in the centralized track. As a result, the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ will continue to exist whereas the equilibrium $g^*(\gamma) = \gamma$ under centralized financing will be replaced by an equilibrium $g^*(\gamma) \in (\gamma, \gamma + \rho(1 - \gamma)]$ under the dual track system.

The key insight behind Proposition 5 is that centralized financing has its dilemma and a dual track system can overcome this dilemma. While centralized financing can stabilize the economy, such stabilization may come at the cost of soft budget constraints compromising firms' incentives to improve their performances. By splitting the economy into two tracks, a dual track system can rely on the centralized track to stabilize the economy, and depend on the decentralized track to build a commitment to hard budget constraints. As the economy is stabilized, the

disciplinary effect of the commitment within the decentralized track then provides powerful incentives for firms to engage in costly restructuring.

A natural question is whether such a dual track system can be mimicked under centralized financing. One central feature of a dual track system is the “discriminatory” funding practices faced by bad firms in the two tracks. In the decentralized track, a bad firm is never financed; whereas in the centralized track, a bad firm may be financed. Had the large funding source been able to commit to targeting subsidized financing to some bad firms in particular (and as a result other bad firms are never financed), centralized financing could mimic the dual track system, as it would promote incentives to restructure for those opportunistic firms not targeted. However, the large funding source may not be able to adhere to such a commitment, especially when the productivity of different bad firms differs at the funding stage.²¹

5.3. The Extent and the Distribution of Efficiency Gains

We now know that a transition from centralized financing to a dual track system can be efficiency enhancing for an economy suffering from a soft budget constraint syndrome that compromises firms’ incentives. What we don’t know yet is what is the extent of the efficiency gain and how the efficiency gain is distributed across the centralized track and decentralized track.

To address these questions, I compare centralized financing with a dual track system of the optimal allocation for $\gamma \in [\underline{\gamma}, \gamma_2)$. Naturally, my comparison will focus *exclusively* on two distinct equilibrium outcomes under these two financial structures, that is, the “low” equilibrium under the dual track system $g^*(\gamma) \in (\gamma, \gamma + \rho(1 - \gamma))$ ²² and the “low” equilibrium under centralized financing (i.e, $g^*(\gamma) = \gamma$).

²¹ For example, suppose the productivity of a bad firm is a random variable, which is distributed independently across all firms and is not realized until the funding stage. Then under centralized financing, the large funding source will not be able to commit to targeting a particular set of bad firms. For the sake of expositional simplicity, I would not model such a lack of commitment explicitly.

²² Notice that I has not yet ruled out the possibility that, under a dual track system, there exists a unique equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ in which case the “low” equilibrium will be the same as “high” equilibrium. However, as I will show later, such a possibility does not exist and in the “low” equilibrium $g^*(\gamma) \in (\gamma, \gamma + \rho(1 - \gamma))$.

Let me first characterize the optimal allocation for the dual track system. An allocation $\{k_c(\gamma), \gamma_{cx}(\gamma)\}$ is said to be optimal if there does not exist another allocation $\{k_{cz}(\gamma), \gamma_{cz}(\gamma)\}$ such that the allocation $\{k_{cz}(\gamma), \gamma_{cz}(\gamma)\}$ is more efficient than the allocation $\{k_{cx}(\gamma), \gamma_{cx}(\gamma)\}$.²³

Lemma 8: An allocation $\{k_c^*(\gamma), \gamma_c^*(\gamma)\}$ for $\gamma \in [\underline{\gamma}, \gamma_2)$ is optimal if and only if

- (1) $k_c^*(\gamma) \geq \underline{A}$, $\gamma_c^*(\gamma) \geq \underline{\gamma}$;
- (2) $\{k_c^*(\gamma), \gamma_c^*(\gamma)\}$ satisfies condition [1] and [2] if the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ exists under centralized financing; and
- (3) $k_c^*(\gamma) - \gamma_c^*(\gamma) = \min\{k_c(\gamma) - \gamma_c(\gamma)\}$

Proof: see Appendix.

The first two parts in Lemma 8 are obvious from earlier discussions. To make sense of the last part, notice that, under a dual track system, budget constraints are always harder in the decentralized track than in centralized track. *Ceteris paribus*, it is therefore optimal to allocate as many as possible firms whose performances can be potentially improved under hard budget constraints (i.e., opportunistic firms) to the decentralized track. Since the measure of opportunistic firms in the decentralized track is $\rho[1 - \gamma - (k_c(\gamma) - \gamma_c(\gamma))]$,²⁴ an optimal allocation therefore requires $k_c(\gamma) - \gamma_c(\gamma)$ to be minimized (subject to (1) and (2)).²⁵

I am now ready to dissect the impact of a transition from centralized financing to a dual track system with the optimal allocation. Under centralized financing, there is only one track in an economy: the centralized track. In that track, no firms restructure in the equilibrium $g^*(\gamma) = \gamma$ and the corresponding softness of budget constraints is $\lambda(\gamma) = (\underline{A} - \gamma)/(1 - \gamma)$.

The transition takes the economy to the dual track system where the equilibrium $g^*(\gamma) = \gamma$ is replaced by the equilibrium $g^*(\gamma) \geq \gamma + \rho[1 - \gamma - (k_c^*(\gamma) - \gamma_c^*(\gamma))]$. That is, the restructuring takes place at least in the decentralized track under the dual track system. But will restructuring even take place in the centralized track in this equilibrium?

²³ The notion of an allocation $\{k_{cx}(\gamma), \gamma_{cx}(\gamma)\}$ being more efficient than another allocation $\{k_{cz}(\gamma), \gamma_{cz}(\gamma)\}$ is the same as the notion of one financial structure X being more efficient than another financing structure Z (see section 3).

²⁴ Recall that the allocation is contingent on whether a firm is good or bad (before restructuring).

²⁵ I show in the proof of Lemma 9 that minimizing $k_c(\gamma) - \gamma_c(\gamma)$ does not affect firms' behaviors in the centralized track.

In other words, will $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ be the unique equilibrium under the dual track system? Unfortunately, it won't, as the next observation shows.

Lemma 9: For $\gamma \in [\underline{\gamma}, \gamma_2)$, there exists an equilibrium where $g^*(\gamma) = \gamma + \rho[1 - \gamma - (k_c^*(\gamma) - \gamma_c^*(\gamma))]$ and $\lambda(\gamma) = [\underline{A} - g^*(\gamma)]/[k_c^*(\gamma) - \gamma_c^*(\gamma)]$ under the optimal dual track system $\{k_c^*(\gamma), \gamma_c^*(\gamma)\}$.

Proof: see Appendix.

Lemma 9 highlights the extent of the efficiency gain that a dual track system brings over centralized financing. It hinges on the observation that, for $\gamma \in [\underline{\gamma}, \gamma_2)$, budget constraints in the centralized are always softer under a dual track system than under centralized financing, despite the fact that restructuring is taking place in the decentralized track under a dual track system.

Restructuring taking place in the decentralized track has two countervailing effects on the softness of budget constraints. On the one hand, restructuring in the decentralized track reduces the measure of bad firms that the large funding source has to finance in order to stabilize the economy. Thus restructuring in the decentralized track has an effect of hardening budget constraints in the centralized track. But on the other hand, the large funding source finances bad firms only within the centralized track. As the dual track system spins off some bad firms to the decentralized track, the large funding source also has fewer bad firms to finance. As a result, restructuring in the decentralized track also leads to an effect of softening budget constraints in the centralized track. As it turns out, the budget-softening effect always dominates the budget-hardening effect.

Combining Proposition 5 and Lemma 9, I arrive at the final conclusion that summarizes the distribution of the efficiency gain under the optimal dual track system $\{k_c^*(\gamma), \gamma_c^*(\gamma)\}$:

Proposition 6: Consider an economy that suffers from a soft budget constraint syndrome that compromises firms' incentives to engage in costly restructuring. A transition to the optimal dual track system has the following effects:

- (1) restructuring takes place in the decentralized track (i.e., $g^*(\gamma) > \gamma$);
- (2) budget constraints become softer in the centralized track (i.e., $\lambda(\gamma) > (\underline{A} - \gamma)/(1 - \gamma) > 0$); and
- (3) the economy reaches an equilibrium that is more efficient.

According to Proposition 6, a dual track system is only a half-way reform measure. It allows the centralized track to delay due restructuring by softening budget constraints in that part of the economy. Nevertheless, the soft budget constraint syndrome in the centralized track complements restructuring in the decentralized track, in the sense that it helps stabilize the economy and hence enhances the disciplinary effect of hard budget constraints in the decentralized track.

6. Interpreting China's Dual Track System

Let me now relate my analysis to China's economic reform. There are two defining characteristics of China's economic reform. One is the fast and forceful expansion of the non-state sector. Its share in China's total industrial output has increased from a mere 24 percent in 1980 to more than 75 percent in 1997. The other defining characteristic is the gradual and piecemeal approach toward its state industry and banking sector. There has been no massive privatization of state-owned enterprises during the last two decades of economic reform, and China's banking sector has continued to be dominated by four major state-owned commercial banks.²⁶

While the economic reform over the past twenty years has brought China an average real GNP growth rate of 10.4 percent, the financial performance of China's state-owned enterprises has deteriorated over recent years despite on-going enterprise reform. In 1985, the amount of losses made by state-owned industrial enterprises was about 3.2 billion and the total profits of these enterprises was around 70 billion. By 1997, the loss rose to more than 80 billion while at the same time the total profits dropped to about 40 billion.

Many of the financial losses have been covered by the state-dominated banking system, which has helped keep chronic loss-making state firms alive. As a result, the state banking system has accumulated a considerable amount of non-performing loans over the years. The total non-performing loans were estimated in the range of 17-25 percent of GDP by 1993 (Lau and Qian (1994)), increasing to 25-35 percent by 1997 (Lardy (1998)).

On the other hand, non-state enterprises have been allocated with a disproportionately low amount of credit from the state banking system (Fan 1999). It is estimated that between 1979-1993, on average 84 percent of all new credits from the state banking system were allocated to the state sector (Brandt and Zhou (1999)). And between 1994 – 19997, non-state sector obtained less than 14 percent of short term loans from the state banking system

²⁶ They account for nearly three-fourths of total bank assets (Bonin *etc* (1999)).

despite the fact that during the same period of time, non-state sector has contributed more than 65 percent of the growth of China's industrial output (Bai, *etc* (1999)).

Without the financial support from the state banking system, the non-state sector has depended heavily on funds internally accumulated and funds that are raised from local economies. Even when firms in the non-state sector do receive funds leaked from the state banking system, those funds are often allocated under a profit-seeking objective. They are therefore quite different from funds formally allocated through the state banking system, which until 1995 were administered through the state's annual credit plans.²⁷ As a result, budget constraints in the non-state sector are much harder than in the state sector (Qian and Roland (1998), Cao, Qian, and Weingast (1999)).

Putting these experiences in the framework of foregoing analysis, it is clear that China's economy has evolved in a dual track system, with the state sector remaining in the track of centralized financing and the non-state sector in the track of decentralized financing. While budget constraints are soft in the centralized track, they are hard(er) in the decentralized track. But why dual track? In particular, why didn't China harden budget constraints of state-owned enterprises and eliminate the state dominance in the banking sector at the onset of economic reforms?

China does not have effective monetary policy instruments because of underdeveloped financial markets. Neither does China have good fiscal policy instruments due to the lack of well-established tax system and recent fiscal decentralization that has limited the central government's fiscal resources. By maintaining the state dominance in the banking sector and a considerable share of state-owned firms in the economy, the central government in China is able to preserve its control of macro economic conditions.

More importantly, the central government often has no choice but to subsidize some of the loss making state-owned enterprises in order to safeguard China's macro economic conditions. This is because that the worsening financial performance of these enterprises often has to do with historical reasons. One of the reasons is the enterprise-based social welfare system that requires a state-owned enterprise to pay for numerous non-labor expenses ranging from health care and housing to schooling and childcare.²⁸ In particular, state-owned enterprises often bear a disproportionately large financial burden on pension expenses as compared to firms in the non-state

²⁷ As the reform progresses, China has sought to inject market disciplines to the banking sector. Three policy banks were established in 1994 to separate policy lending from commercial lending. In practice, however, commercial banks have continued to lend according to government directives. Recently, the state has consistently mandated commercial banks to continue lending to accommodate its policies of supporting large- and medium-sized state enterprises (Bonin *etc* (1999))

²⁸ According to a 1994 World Bank survey of 37 state-owned enterprises, social spending accounted for 76 percent of total labor costs, which included health care (15 percent), pension (22 percent) and housing (37 percent) (World Bank (1996)).

sector.²⁹ Another fact has to do with the resource allocation during the central planning period when industries that may not be sustainable in a market system were promoted due to strategic concerns (Lin *etc* (1996), Lin and Tan (1999), Sachs (1996)). In fact, because of price distortion, it was often impossible for the state to determine whether an enterprise was economically viable or not under central planning. These historical burdens take tolls on many of the enterprises regardless of whether budget constraints are hard or soft and as a result, hard budget constraints will have little disciplinary effect on these enterprises (i.e., the “genuinely” bad firms in this model).

Nevertheless, allocative inefficiency alone cannot explain why the central government has resorted to subsidized financing to keep some of the loss-making state-owned firms alive. Hard budget constraints can serve both as a disciplinary device and as an attrition mechanism. Even when a hard budget constraint cannot promote incentives to restructure, it can still help weed out inefficient firms.

The magnitude of allocative inefficiency matters. While it is impossible to disentangle what losses are due to allocative inefficiency and what are due to incentives, one could nonetheless get a rough picture of this magnitude simply by considering the size of so-called “redundant workers,” i.e., workers that are regarded as unproductive. According to World Bank and China’s State Economic and Trade Commission, the redundant workers account for 15 to 20 percent of employees in the state sector (World Bank (1996)), which is equivalent to about 15 million workers. This implies that an all-out effort to harden budget constraints will put at least 10 percent of the urban labor force out of jobs,³⁰ not to mention some domino effects such an effort could lead to. Thus, given the colossal magnitude of allocative inefficiency, the central government perhaps has little choice (at least for a period of time) but to provide some state firms subsidized financing in an effort to stabilize the macro economic conditions.

Using a standard economic argument, this paper has introduced a particular channel (i.e., skill adoption) through which hard budget constraints can adversely affect macro stability. However, this is by no means the only channel. It is easy to imagine other channels through which hard budget constraints can destabilize an economy. In the introduction, I have mentioned the possibility of political unrest, demand spill over. One can add on to the list. For example, the role of contracts will be diminished when it is anticipated that many firms will disappear from the economic scene. The role of reputation and cooperation will become insignificant when the horizon of many firms

²⁹ In 1994, the employee-retiree ratio was 4.8 for state-owned enterprises and 12.5 for firms in the non-state sector (State Statistical Bureau and Ministry of Labor (1996)).

³⁰ This does not include urban workers that are currently unemployed and surplus labor in China’s rural areas.

gets shortened and the scope of long-term relations is reduced. And when only “few good guys” are left in an economy, there will be less competition.

However, maintaining the state sector has not only allowed China to escape from the devastating experiences of macro instability of Eastern European countries and Russia, it has also provided an environment conducive to the rapid expansion of the non-state sector. While potentially rewarding, empirically establishing the linkage between macro stability and the non-state sector growth as well as the relation between maintaining the state sector and macro stability in the case of China is difficult.³¹ I will therefore refrain myself from venturing into this territory except for pointing to the dismal experience on the other side of the picture: the dramatic output fall and the subsequent stagnation in many of the decentralized transition economies, as in the Introduction. Although it is evident that there is a conscious effort by the central government to stabilize the economy, it is perhaps an unintended consequence that such an effort helps the growth of the non-state sector. In fact, in the foregoing analysis, I have assumed that the large funding source in the centralized track does not share revenues with firms in the decentralized track. This assumption corresponds to the fact that the central government in China has found it difficult to collect taxes from the non-state sector.

It is worth reiterating, however, that a dual track approach has its costs. As suggested earlier, by allowing budget constraints to be soft in the state sector, the dual track approach has to some extent let some of the state firms delay due restructuring. Thus the side effects of the dual track approach are the chronic loss making of many state firms and the accumulated non-performing loans in the state banking system as suggested earlier.³² These side effects deem the dual track approach a transitory reform measure.

Nevertheless, further reforms call for measures more than simply hardening budget constraints. It takes the growth of the non-state sector (i.e., the decentralized track) to diminish the share of bad firms in the economy and hence the destabilizing effect of hardening budget constraints (McMillan and Naughton (1992)). It takes various fundamental reforms to revitalize those bad firms that are otherwise doomed to fail. However, because the growth of the non-state sector and the various fundamental reforms must take time to exert their impacts, the dual track

³¹ One of the obvious difficulties is that China has been undergoing economic transition for only about twenty years. This limits the number of observations and hence the control variables one can incorporate in any econometric model. The other challenge is exactly that during those twenty years, China did not experience macro instability, like the one experienced in Eastern European economies and former Soviet Union.

³² A recent work by Brandt and Zhou (1999) argues that the state’s commitment to state sector employment has created a “stop and go” economic fluctuation in China. However, they didn’t endogenize the reason for such a commitment.

approach becomes an attractive transitory reform measure, and an all-out effort to harden budget constraints becomes counterproductive.

There have not been many studies on China's dual track approach in economic reforms. Li (1999) shows that the dual track approach in price liberalization, which allows firms to produce for the emerging product markets after fulfilling output quotas under planning, helps China avoid output fall at the initial stage of economic reforms. Lau, Qian, and Roland (1999) push the concept of the dual track approach beyond price liberalization. They argue that, by providing both the option of remaining in the planned sector and that of joining the emerging markets, the dual track approach has made the economic reform in China a Pareto improvement. This paper complements these two works by suggesting how the dual track approach has actually contributed to the growth of the non-state sector.

A number of authors have also emphasized the contribution of the state sector to the development of the non-state sector during China's dual track reform, albeit in a micro economic context. The main argument is that the non-state sector has benefited from the state sector through the provision of inputs, technology, market outlets, and outsourcing (see Jefferson and Rawski (1994), Naughton (1994), and Lian and Wei (1993)). However, there has been little discussion concerning whether and how the presence of the state sector has helped the growth of China's non-state sector from a macro economic perspective. This paper serves to fill the vacuum.

7. Conclusion

This paper puts forward a new framework for understanding soft budget constraint syndrome. It emphasizes externality and macro stability in particular as one of the major reasons for the syndrome. It differs from the mainstream framework in the existing literature, *à la* Dewatripont and Maskin (1995).³³

This framework uses the original concept of soft budget constraint syndrome, defined as a situation when firms that are *expected* to lose money get financed (Kornai (1980))³⁴. The concept adopted in the mainstream framework refers to a situation where refinancing financially distressed and yet *potentially profitable* firms invites loss making in the first place. I deviate from the mainstream concept not because the mainstream concept is

³³ Following the tradition of Dewatripont and Maskin (1995), most of works in the soft budget constraint literature model soft budget constraint syndrome as a time-inconsistency problem, where refinancing is *ex post* efficient but *ex ante* inefficient. Lindbeck and Weibull (1988) made an early attempt to model soft budget constraints as such a problem. This theoretical framework is by no means the only one existing in the soft budget constraint literature but is certainly one that is most widely used. Some exceptions include Goldfeld and Quandt (1988), Segal (1998) and Shleifer and Vishny (1994).

“wrong.” In fact, the mainstream concept captures important economic phenomena that are beyond the scope of this paper.³⁵ I adopt the original concept for two reasons.

First, the mainstream concept is difficult to be measured statistically. According to the mainstream concept, budget constraints are soft when refinancing invites loss making and becomes inefficient *ex ante*. Therefore, the concept is based not only on a causal relationship between loss making and refinancing but also on an efficiency implication of refinancing.³⁶ Neither is directly observable. Because of such a difficulty in measurement, few empirical studies have executed this concept appropriately.³⁷ For how soft budget constraints may be measured using the original concept, one may refer to the work by Schaffer (1998).

Second, the original concept is more consistent with a central feature of soft budget syndrome in transition economies: firms in *chronic* losses are kept alive; and is also more compatible with how soft budget constraint syndrome is described in policy-related discussions. This central feature of chronic loss making suggests that one should look *outside a firm* for reasons behind soft budget constraint syndrome. This is why this new framework focuses on externality and macro stability in particular. In contrast, the mainstream framework emphasizes dynamic concerns *inside a firm*: the firm is *temporarily* financial distressed but will be profitable once refinanced.

But does it matter whether budget constraints are soft because of externality reasons outside a firm or due to dynamic concern inside a firm? It is contended that, as long as budget constraints are soft, firms’ incentives to improve their performances will be compromised.³⁸ As a result, the mainstream framework devotes little effort to exploring and differentiating various reasons behind soft budget constraints. This paper demonstrates that reasons for soft budget constraints do matter. It shows that, when budget constraints are soft because of concerns for macro stability, a commitment to hard budget constraints can be neither necessary nor sufficient for encouraging firms to improve their performances.

³⁴ In Kornai’s analysis, the reason for the soft budget constraint syndrome is “paternalism” by the state. This analysis attributes the reason to pecuniary externality such as macro stability.

³⁵ Indeed, many important contributions, including the seminal work by Dewatripont and Maskin (1995), have been made under the mainstream framework. See for example, Berglof and Roland (1995, 1997, 1998), Huang and Xu (1999), Li (1999), Qian (1994), Qian and Roland (1998), and Schmidt (1996).

³⁶ It is well known in the corporate finance literature that refinancing can also promote incentives and be *ex ante* efficiency enhancing (see Neher (1999) and von Thadden (1995) for example).

³⁷ Some recent empirical works would simply equate losses as a measure of soft budget constraints while applying this mainstream concept of soft budget constraints.

³⁸ See Maskin and Xu (1999) for example.

Such a difference originates from the fact that the mainstream framework stresses a conflict between *ex post* allocative efficiency and *ex ante* incentives, whereas this framework emphasizes both the conflict as well as a complementary relationship. In particular, in this framework, (*ex post*) allocative efficiency calls for internalizing externality, which softens budget constraints on the one hand but on the other hand enhances firms' productivity and can therefore improve their *ex ante* incentives to restructure. Because of this difference, the mainstream framework sometimes sees efforts aimed at improving allocative efficiency as potentially incentive compromising. On the contrary, this framework regards these efforts as a part of the reform measures that may ultimately help transition economies eliminate the soft budget constraint syndrome.

References

- Bai, C., Li, D., and Wang, Y., "Dancing with Bureaucrats: the Evolution of China's Non-State Sector," working paper, Hong Kong University of Science and Technology.
- Berglof, E. and Roland, G. (1995), "Bank Restructuring and Soft Budget Constraints in Financial Transition," *Journal of the Japanese and International Economies*, v9, n4, p.p. 354-75.
- Berglof, E. and Roland, G. (1997), "Soft Budget Constraints and Credit Crunches in Financial Transition," *European Economic Review*, v41, n3-5, p.p. 807-17.
- Berglof, E. and Roland, G. (1998), "Soft Budget Constraints and Banking in Transition Economies," *Journal of Comparative Economics*, v26, n1, p.p. 18-40.
- Blanchard, O. and Kremer, M. (1997), "Disorganization," *Quarterly Journal of Economics*, v112, n4, p.p. 1091 – 1126.
- Bonin, J., Cheng, H. and Jaffee, D. (1999), "Bad Loans and Policy Lending in China," working paper, World Bank.
- Cao, Y, Qian, Y., and Weingast, B. (1999), "From Federalism, Chinese Style to Privatization, Chinese Style," *Economics of Transition*, v7, n1, p.p. 103-131.
- Calvo, G., and Coricelli, F. (1995), "Output Collapse in Eastern Europe: The Role of Credit," in Blejer, M. I., Calvo, G., Coricelli, F., and Gelb, A., (eds.): *Eastern Europe in Transition: From Recession to Growth?* Washington D.C.: World Bank.
- Dewatripont, M. and Maskin, E. (1995), "Credit and Efficiency in Centralized and Decentralized Economies," *Review of Economic Studies*, v62, n4, p.p. 541-55.
- Fan, G. (1999), "Shei Lai Gei ZhongXiao QiYe DaiKuan?" *ZhuJiang JingJi*, n.7, p.p. 6-7.
- Goldfeld, S. and Quandt, R. (1988), "Budget Constraints, Bailouts, and the Firm under Central Planning," *Journal of Comparative Economics*, v12, n4, p.p. 502-20.
- Huang, H. and Xu, C. (1999), "Financial Institutions, Financial Contagion, and Financial Crises," mimeo, the William Davidson Institute working paper series.
- Kornai, J. (1980), *Economics of Shortage*, Amsterdam: North-Holland.
- Lau, L., Qian, Y., and Roland, G., (1999), "Reform without Losers: An Interpretation of China's Dual-Track Approach to Transition," *Journal of Political Economy*
- Li, W. (1999) "A Tale of Two Reforms," *Rand Journal of Economics*; v30 n1. p.p. 120-136.
- Li, D. (1998), "Insider Control and the Soft Budget Constraint: a simple theory," *Economics Letters*
- Lian, P. and Wei, S. (1993), "Love and Hate: State and Non-State Firms in Transition Economies," discussion paper, JFK School of Government.
- Lin, J. Y., and Tan, G. (1999), "Policy Burdens, Accountability, and the Soft Budget Constraint," *American Economic Review*, v89, n2, p.p. 426-31.
- Lin, Y., Cai, F., and Zhou, L. (1996), *The China Miracle: Development strategy and economic reform*. Hong Kong: Chinese University Press.

- Lindbeck, A. and Weibull, J. (1988), "Altruism and Time Consistency: The Economics of Fait Accompli," *Journal of Political Economy*, v96, n6, p.p. 1165-82.
- Maskin, E. and Xu, C. (1999), "Soft Budget Constraint Theories: From Centralization to the Market," mimeo, Harvard University.
- McMillan, J. and Naughton, B. (1992), "How to Reform a Planned Economy: Lessons from China," *Oxford Economic Review*, 8, p.p. 130-143.
- Naughton, B. (1994), "Chinese Institutional Reform and Privatization from Below," *American Economic Review*, v84, n2, p.p. 266-270.
- Neher, D. (1999), "Staged Financing: An Agency Perspective," *Review of Economic Studies*, v66, n2, p.p. 255-274.
- Qian, Y. (1994), "A Theory of Shortage in Socialist Economies Based on the "Soft Budget Constraint," *American Economic Review* v84 n1 p.p 145-156.
- Qian, Y. and Roland, G. (1998), "Federalism and the Soft Budget Constraint," *American Economic Review*, v88, n5, p.p. 1143-62.
- Roland, G. and Verdier, T. (1999), "Transition and the Output Fall," *Economics of Transition*, v7, n1, p.p. 1 – 28.
- Sachs, J. (1996), "Notes on the Life-Cycle of State-led Industrialization," *Japan and the World Economy*, v8, n2, p.p. 153-174.
- Segal, I. (1998), "Monopoly and Soft Budget Constraint," *Rand Journal of Economics*, v29, n3, p.p. 596-609.
- Schaffer, M. (1998), "Do Firms in Transition Economies Have Soft Budget Constraints? A Reconsideration of Concepts and Evidence," *Journal of Comparative Economics*, v26, n1, p.p. 80-103
- Schmidt, K. (1996), "The Costs and Benefits of Privatization: An Incomplete Contracts Approach," *Journal of Law, Economics, and Organization*, v12, n1, p.p. 1-24.
- Shleifer, A. and Vishny, R. (1994), "Politicians and Firm," *Quarterly Journal of Economics*, v109, n4, p.p. 995-1025.
- State Statistical Bureau and Ministry of Labor (1996), *China Labor Statistical Yearbook 1996*
- von Thadden, E. (1995), "Long-Term Contracts, Short-Term Investment and Monitoring," *Review of Economic Studies*, v62, n4, p.p. 557-75.
- World Bank (1996), *China: Reform of State-Owned Enterprises*

Appendix

Proof of Proposition 2:

The proof is based on the definition of “better incentives”. It is divided into four parts. The first two parts show that decentralized financing never improves incentives as compared to centralized financing. The last two parts demonstrate that decentralized financing actually hurts incentives in comparison with centralized financing.

(1) $\gamma \geq \underline{\Delta}$. It is evident that there exists a unique equilibrium where every opportunistic firm restructures under centralized financing. Hence decentralized financing cannot improve incentives in this case.

(2) $\gamma \in [\gamma_h, \underline{\Delta}]$. According to Lemma 1, there exists two equilibria under decentralized financing. In one equilibrium every opportunistic firm restructures ($g^*(\gamma) = \gamma + \rho(1 - \gamma)$), and in the other no opportunistic firm restructures and market crashes ($g^*(\gamma) = 0$). Is $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ still an equilibrium under centralized financing? The answer is yes. Anticipating all other opportunistic firms to engage in costly restructure (so that $g(\gamma) = \gamma + \rho(1 - \gamma)$), an opportunistic firm realizes that it will be financed *if and only if* it chooses restructuring (since $g(\gamma) \geq \underline{\Delta}$). In other words, there exists an equilibrium under centralized financing where every opportunistic firm restructures. Hence decentralized financing cannot improve incentives in this case.

(3) $\gamma < \underline{\Delta}$ and γ is arbitrarily close to $\underline{\Delta}$. According to Lemma 1, there exists two equilibria under decentralized financing. In one equilibrium every opportunistic firm restructures ($g^*(\gamma) = \gamma + \rho(1 - \gamma)$), and in the other no opportunistic firm restructures and market crashes ($g^*(\gamma) = 0$). Can $g^*(\gamma) = 0$ still be an equilibrium under centralized financing? The answer is no since under centralized financing the large funding source must find it worthwhile to finance some bad firms to stabilize the economy, given that γ is arbitrarily close to $\underline{\Delta}$. Is $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ still an equilibrium under centralized financing? The answer is yes. This is because, given γ is arbitrarily close to $\underline{\Delta}$, $\lambda(\gamma)$, the share of bad firms that are financed on the financial market must be arbitrarily small. Accordingly, the budget constraint for an opportunistic firm is *almost* hard. Hence every opportunistic firm will restructure.

(4) $\gamma < \gamma_h$ and γ is arbitrarily close to γ_h . According to Lemma 1, there exists a unique equilibrium of market crash ($g^*(\gamma) = 0$) under decentralized financing. In contrast, under centralized financing, $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ remains an equilibrium. Suppose that an opportunistic firm anticipates all other opportunistic firms to restructure and as a result $g(\gamma) = \gamma + \rho(1 - \gamma)$. Since γ is arbitrarily close to γ_h , by the definition of γ_h , the large funding source must be willing to finance some bad firms to stabilize the economy when every opportunistic firm restructures. However, given that γ is arbitrarily close to γ_h , the share of bad firms that are financed on the financial market must be arbitrarily small when every opportunistic firm restructures. Therefore, an opportunistic firm sees its budget constraint as *almost* hard when anticipating all other opportunistic firms to restructure. Hence, an opportunistic firm will restructure when anticipating all other opportunistic firms to restructure.

Proof of Proposition 3:

I compare the equilibrium outcomes under decentralized financing with those under centralized financing. I divide the comparison into three parts.

(1) $\gamma \geq \underline{\Delta}$. Following the proof of Proposition 2, it is known that, for $\gamma \geq \underline{\Delta}$, there exists a unique equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ under both decentralized financing and centralized financing. Therefore, for an economy $E(\gamma)$ such that $\gamma \geq \underline{\Delta}$, centralized financing is as efficient as decentralized financing.

(2) $\gamma < \gamma_h$. According to Lemma 1, there exists a unique equilibrium $g^*(\gamma) = 0$ under decentralized financing for $\gamma < \gamma_h$. But following the proof of Proposition 2, it can be concluded that there must exist $\gamma_s < \gamma_h$ such that for $\gamma \geq \gamma_s$, there exists an equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ under centralized financing. In other words, for $\gamma \in [\gamma_s, \gamma_h)$ the equilibrium with $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ exists under centralized financing but not under decentralized financing.

(3) $\gamma \in [\gamma_h, \underline{\Delta}]$. According to Lemma 1, there exists two equilibria $g^*(\gamma) = 0$ and $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ for $\gamma \in [\gamma_h, \underline{\Delta}]$ under decentralized financing. Following the proof of Proposition 2, it is known that the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ also exists under centralized financing for $\gamma \in [\gamma_h, \underline{\Delta}]$. But it is also known from the proof of Proposition 2 that for some $\gamma \in [\gamma_h, \underline{\Delta})$ the equilibrium with $g^*(\gamma) = 0$ no longer exists under centralized financing (*perhaps* replaced by the equilibrium with $g^*(\gamma) = \gamma$).

Using the “comparative efficiency criterion,” I therefore conclude that decentralized financing is less efficient than centralized financing.

Proof of Lemma 2:

For the equilibrium with $g^*(\gamma) = \gamma$ to exist under centralized financing, the large funding source must be willing to finance given that no opportunistic firms choose to restructure (i.e., $g(\gamma) = \gamma$). That is,

$$\gamma\alpha(q - \underline{w}) - (\underline{A} - \gamma)\underline{w} \geq 0.$$

At the same time, each opportunistic firm must not be willing to restructure, anticipating that financing will take place and that no other opportunistic firms will restructure, that is:

$$(\underline{A} - \gamma)/(1 - \gamma)B > (1 - \alpha)(q - \underline{w}) - d$$

where $(\underline{A} - \gamma)/(1 - \gamma) = \lambda(\gamma)$ is the share of bad firms that are financed, which is also the probability that an opportunistic firm to be financed.

Substituting $\mu = \alpha(q - \underline{w})/\underline{w}$ and $v = [(1 - \alpha)(q - \underline{w}) - d]/B$, I then have

$$\underline{A}/(1 + \mu) \leq \gamma < (\underline{A} - v)/(1 - v)$$

as the necessary and sufficient condition for the equilibrium $g(\gamma) = \gamma$ to exist under centralized financing.

Proof of Proposition 5:

The necessary condition is obvious and thus omitted.

Consider the sufficient condition. Without loss of generality, I set $\gamma_c = \gamma$ in condition [1] and [2]. This gives me two thresholds for k_c . Define $k_c^1(\gamma)$ and $k_c^2(\gamma)$ such that condition [1] and [2] hold in equality respectively. It is easy to verify that given Assumption 4, $\max\{k_c^1(\gamma), k_c^2(\gamma)\} \leq 1$ for $\gamma \geq \gamma_1$. Therefore, the following allocations are well defined.

- if $\gamma \geq \gamma_1$, then $k_c(\gamma) = \max\{\underline{A}, k_c^1(\gamma), k_c^2(\gamma)\}$ and $\gamma_c(\gamma) = \gamma$;
- otherwise, $k_c(\gamma) = \max\{\underline{A}, k_c^1(\gamma), k_c^2(\gamma)\}$ and $\gamma_c(\gamma) = \gamma$ for $\gamma \in [\gamma_1, \gamma_2)$ and $k_c(\gamma) = \underline{A}$ and $\gamma_c(\gamma) = \gamma$ for $\gamma \in [\underline{\gamma}, \gamma_1)$.

Given that $k_c(\gamma) \geq \underline{A}$ and $\gamma_c(\gamma) \geq \gamma$, the equilibrium $g^*(\gamma) = \gamma$ under centralized financing will be replaced by $g^*(\gamma) \in (\gamma, \gamma + \rho(1 - \gamma))$ under the dual track system (by Lemma 5), and the equilibrium $g^*(\gamma) = 0$ does not exist under the dual track system (since $\gamma \geq \underline{\gamma}$). And if the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ exists under centralized financing (i.e., if $\gamma \geq \max\{\gamma_1, \underline{\gamma}\}$), it must continue to exist under the dual track system given that $k_c(\gamma) \geq \max\{k_c^1(\gamma), k_c^2(\gamma)\}$.

Proof of Lemma 8:

Notice first that, under a dual track system, the measure of opportunistic firms in the decentralized track is $\rho[1 - \gamma - (k_c(\gamma) - \gamma_c(\gamma))]$. Therefore the measure of firms restructuring in the decentralized track in an equilibrium $g^*(\gamma) \in (\gamma, \gamma + \rho(1 - \gamma))$ is maximized when $k_c(\gamma) - \gamma_c(\gamma)$ is minimized.

At the same time, an optimal allocation must maintain the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ if the equilibrium exists under centralized financing, and avoid the equilibrium $g^*(\gamma) = 0$ that does exist under centralized financing. Hence (1) and (2).

The remaining issue is whether an allocation $\{k_c(\gamma), \gamma_c(\gamma)\}$ can induce an opportunistic firm in the centralized track to restructure. Ideally, an optimal allocation should also maximize such incentives, *ceteris paribus*.

There are two cases. The first case is when the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ exists under centralized financing. In this case, the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ continues to exist under a dual track system provided that $\{k_c(\gamma), \gamma_c(\gamma)\}$ satisfies condition [1] and [2]. But is there an allocation $\{k_c(\gamma), \gamma_c(\gamma)\}$ such that an opportunistic firm in the centralized track will choose to restructure, even when anticipating no other opportunistic firms in the centralized track to restructure?

The answer is no. To see this, consider the incentive compatibility constraint for an opportunistic firm in the centralized track:

$$[\underline{A} - \gamma - \rho(1 - \gamma)]/(k_c - \gamma_c) + \rho \leq v.$$

For any γ , the left-hand side of this inequality is minimized at $(\underline{A} - \gamma)/(1 - \gamma)$ when $k_c - \gamma_c = 1 - \gamma$. But as γ_2 is defined as $(\underline{A} - \gamma)/(1 - \gamma) = v$, it then follows that for any $\gamma < \gamma_2$, the minimal of $[\underline{A} - \gamma - \rho(1 - \gamma)]/(k_c - \gamma_c) + \rho$ with respect to $k_c - \gamma_c$ must exceed v . Hence an opportunistic firm in the centralized track will not restructure when anticipating no other opportunistic firms in the centralized track to restructure for $\gamma < \gamma_2$, regardless of the allocation.

The second case is when the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ does not exist under centralized financing (i.e., $\gamma < \gamma_1$). In this case, there is an additional question as to whether there exists an allocation $\{k_c(\gamma), \gamma_c(\gamma)\}$ such that an opportunistic firm in the centralized track will choose to restructure, when anticipating all other opportunistic firms in the centralized track to restructure. Using the logic similar to what is presented above, it is straightforward to verify that an opportunistic firm in the centralized track will not restructure when anticipating no other opportunistic firms in the centralized track to restructure for $\gamma < \gamma_1$, regardless of the allocation.

Since it is not possible for an allocation $\{k_c(\gamma), \gamma_c(\gamma)\}$ to induce an opportunistic firm in the centralized track to restructure (if it is unwilling to do so under centralized financing), the optimal allocation must minimize $k_c(\gamma) - \gamma_c(\gamma)$ subject to (1) and (2).

Proof of Lemma 9:

Consider first the case where the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ does not exist under centralized financing, i.e., $\gamma < \gamma_1$. In this case, even when anticipating all other opportunistic firms to restructure, the budget constraint faced by an opportunistic firm in the centralized track is too soft for it to undertake restructuring. In particular,

$$\lambda(\gamma) = [\underline{A} - \gamma - \rho(1 - \gamma)] / [(1 - \rho)(k_c^* - \gamma_c^*)]$$

which is at least as large as $[\underline{A} - \gamma - \rho(1 - \gamma)] / [(1 - \rho)(1 - \gamma)]$. But according to the definition of γ_1 , for all $\gamma < \gamma_1$ even the softness of $[\underline{A} - \gamma - \rho(1 - \gamma)] / [(1 - \rho)(1 - \gamma)]$ is too much for an opportunistic firm to restructure. Therefore, an opportunistic firm will never restructure in the centralized track for $\gamma < \gamma_1$.

Consider next the case where the equilibrium $g^*(\gamma) = \gamma + \rho(1 - \gamma)$ does exist under centralized financing, i.e., $\gamma \in [\gamma_1, \gamma_2)$. In this case, the question becomes whether an opportunistic firm in the centralized track will restructure when anticipating no other opportunistic firms in the centralized track to restructure.³⁹ Again, the budget constraint will be too soft for an opportunistic firm in the centralized track to restructure. In particular, anticipating no other opportunistic firms in the centralized track to restructure, the perceived budget softness is given by:

$$\lambda(\gamma) = [\underline{A} - \gamma - \rho(1 - \gamma - k_c^* + \gamma_c^*)] / (k_c^* - \gamma_c^*)$$

which is at least as large as $(\underline{A} - \gamma) / (1 - \gamma)$. But according to the definition of γ_2 , for all $\gamma < \gamma_2$ even the softness of $(\underline{A} - \gamma) / (1 - \gamma)$ is too much for an opportunistic firm to restructure. Therefore, for $\gamma < \gamma_2$ an opportunistic firm in the centralized track will not restructure while anticipating no other opportunistic firms to restructure in the centralized track.

³⁹ Opportunistic firms in the decentralized track will restructure.

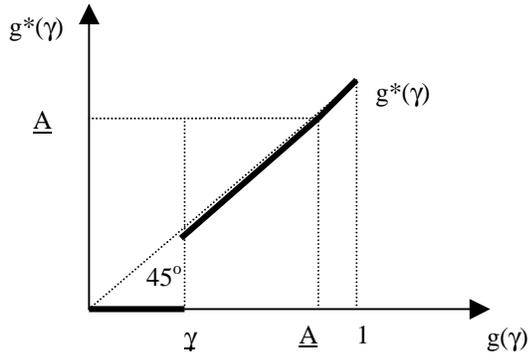


Figure 1-a Centralized Financing

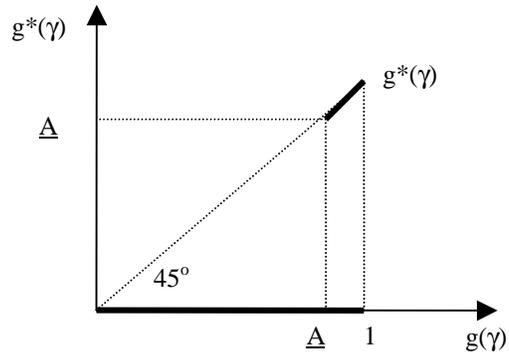


Figure 1-b Decentralized Financing

Figure 1

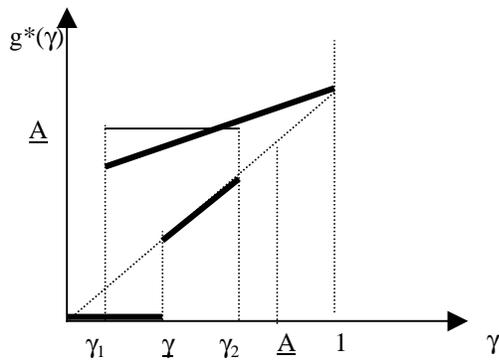


Figure 2 - a

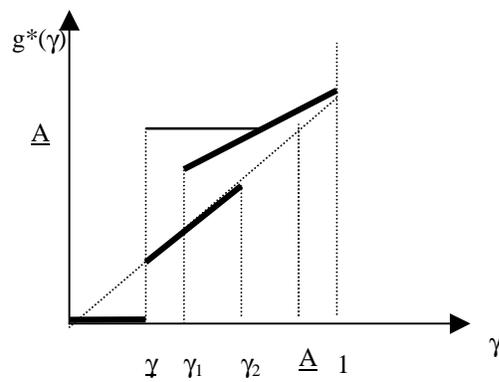


Figure 2 - b

Figure 2⁴⁰

⁴⁰ It is straightforward to show that $\gamma_1 < \gamma_2 < \underline{A}$. Consider γ such that $\gamma < \underline{A}$ but sufficiently close to \underline{A} , the share of bad firms that are financed on the financial market must be negligible, therefore, the budget constraint is almost hard and as a result an opportunistic firm will always restructure. In other words, it must be true that $\gamma > \gamma_2$. Hence $\gamma_2 < \underline{A}$. In addition, since by definition, $\gamma_1 + \rho(1 - \gamma_1) = \gamma_2$, $\gamma_1 < \gamma_2$.

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